

DC11

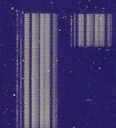
DC11 OFLNE DIAG TEST
CZDCADO

AH-8430D-MC
FICHE 1 OF 1

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Grid of technical diagrams and data tables, including various charts and tables.



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IDENTIFICATION

PRODUCT CODE: AC-8428D-MC
PRODUCT NAME: CZDCAD0 DC11 OFLNE DIAG TST
PRODUCT DATE: MAY 1980
MAINTAINER: DIAGNOSTIC GROUP

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1. ABSTRACT

TWO SEPARATE DIAGNOSTIC PROGRAMS ARE PROVIDED FOR THE DC-11 (ASYNCHRONOUS MODEM INTERFACE), CZDCA (DC-11 OFF LINE TESTS) AND CZDCB (DC-11 ON LINE TESTS). THE OFF LINE TESTS TEST ALL DC11 LOGIC AND MAY BE USED TO INDIVIDUALLY TEST UP TO 32 DC-11'S. THE OFF LINE TESTS DO NOT REQUIRE THE USE OF A MODEM, HOWEVER A SPECIAL JUMPER CONNECTOR IS REQUIRED. THE ON LINE TESTS ARE ESSENTIALLY DATA RELIABILITY TESTS REQUIRING THE USE OF MODEMS AND A SUITABLE TERMINAL DEVICE.

THIS DOCUMENT DESCRIBES THE OFF LINE TESTS.

THE AVAILABLE TESTS ARE:

PRG0	INPUT/OUTPUT LOGIC TESTS
PRG1	TRANSMITTER SCOPE LOOP
PRG2	RECEIVER SCOPE LOOP
PRG3	SINGLE CHARACTER MAINT. MODE DATA TEST
PRG4	SPECIAL BINARY COUNT MAINTENANCE MODE DATA TEST

2. REQUIREMENTS

2.1 EQUIPMENT

A. PDP 11/20 SYSTEM

B. DC11

C. SPECIAL JUMPER CONNECTOR (SEE DC11 MAINTENANCE MANUAL FOR DETAILED DESCRIPTION)

2.2 STORAGE

THIS PROGRAM USES ALL OF CORE (4K) EXCEPT THAT AREA RESERVED FOR THE BOOTSTRAP AND ABSOLUTE LOADERS.

3. LOADING PROCEDURE

THE ABSOLUTE LOADER IS USED TO LOAD THE PROGRAM.

4. USE PROCEDURE
BEFORE STARTING ANY OF THE SELECTABLE PROGRAMS MAKE SURE
THAT THE TTY IS IN REMOTE MODE; AND THAT THE PROGRAM SELECTED
IS A LEGAL PROGRAM, IE. SR 0-2=0-4, OTHERWISE PROGRAM OP-
ERATION IS UNSPECIFIED. RELOAD PROGRAM AND START OVER.

4.1 PRGO INPUT/OUTPUT LOGIC TESTS

- A. LOAD ADDRESS = 000200 (RESTART LOAD ADDR. = 000200)
LOAD SR 0-2 = 0, AND PRESS START SWITCH.
THE DIAGNOSTIC WILL IDENTIFY THE PROGRAM YOU SELECTED.
'PRGO-INPUT-OUTPUT LOGIC TESTS. DISCONNECT DC11 FROM MODEM
AND CONNECT JUMPER TO CABLE'
DISCONNECT THE DC11 FROM THE MODEM AND INSERT THE JUMPER CON-
NECTOR IN THE MODEM END OF THE CABLE, AND PRESS CONTINUE.
NOTE, IF THE CABLE IS LEFT CONNECTED TO THE MODEM THE FOL-
LOWING TESTS WILL FAIL:
AT5, AT34-AT42, AT44, AND AT144
- B. THE PROGRAM WILL NOW REQUEST THE LINE # (8) YOU WISH TO
TEST. LOAD THE LINE # AS REQUESTED AND PRESS CONTINUE.
LINE NUMBER REFERS TO THE ADDRESSES TO WHICH THE DC11 RESPONDS.

LINE 0	77400X	LINE 10	77410X	LINE 20	77420X	LINE 30	77430X
LINE 1	77401X	LINE 11	77411X	LINE 21	77421X	LINE 31	77431X
LINE 2	77402X	LINE 12	77412X	LINE 22	77422X	LINE 32	77432X
LINE 3	77403X	LINE 13	77413X	LINE 23	77423X	LINE 33	77433X
LINE 4	77404X	LINE 14	77414X	LINE 24	77424X	LINE 34	77434X
LINE 5	77405X	LINE 15	77415X	LINE 25	77425X	LINE 35	77435X
LINE 6	77406X	LINE 16	77416X	LINE 26	77426X	LINE 26	77436X
LINE 7	77407X	LINE 17	77417X	LINE 27	77427X	LINE 27	77437X

- C. THE PROGRAM WILL TYPE OUT INSTRUCTIONS TO SET IN THE DESIRED
SR OPTIONS. PRESS CONTINUE WHEN THE OPTIONS ARE IN THE SR.
THE AVAILABLE OPTIONS ARE:
SR 0-6 ROUTINE TO BE RUN (IF ENABLED BY SR9)
SR8 DISABLE STALL MODE
SR9 LOOP SELECTED ROUTINE
SR10 HALT AT END OF PROGRAM
SR11 INHIBIT ITERATION
SR13 INHIBIT PRINTOUT
SR14 SCOPE
SR15 HALT ON ERROR.
- D. THE PROGRAM WILL NOW BEGIN TESTING THE DC11 YOU SELECTED.
- E. REFER TO SECTION 5.1.2 FOR ERROR DESCRIPTION
- F. AFTER ONE COMPLETE PASS PRGEND WILL BE TYPED OUT

4.2 PRG1 - TRANSMITTER SCOPE LOOP

- A. LOAD ADDRESS = 000200

LOAD SR 0-2 = 1, AND PRESS START SWITCH.
THE DIAGNOSTIC WILL IDENTIFY THE PROGRAM YOU SELECTED, AND
REQUEST THE LINE # YOU WISH TO TEST. LOAD THE LINE # AS RE-
QUESTED AND PRESS CONTINUE.

B.
THE PROGRAM WILL REQUEST THE DC11 LINE PARAMETERS. LOAD THE
PARAMETERS AS REQUESTED AND PRESS CONTINUE.

C. THE PROGRAM WILL REQUEST A CHARACTER CODE, AND A DELAY
TIME. THE CHARACTER CODE IS THE DATA THE DC11 WILL TRANSMIT
AND THE DELAY IS THE TIME ELAPSED BETWEEN SUCCESSIVE TRANS-
MISSIONS OF CNE CHARACTER. PRESS CONTINUE WHEN THIS IS DONE.

D. THE PROGRAM WILL RUN WITHOUT ERROR OR END TYPEOUTS.

4.3 PRG2 - RECEIVER SCOPE LOOP

A. LOAD ADDRESS = 000200
LOAD SR 0-2 = 2, AND PRESS START.
THE DIAGNOSTIC WILL IDENTIFY THE PROGRAM YOU SELECTED, AND
REQUEST THE LINE # YOU WISH TO TEST. LOAD THE LINE # AS REQ-
UESTED AND PRESS CONTINUE.

B. THE PROGRAM WILL REQUEST THE DC11 LINE PARAMETERS. LOAD THE
PARAMETERS AS REQUESTED AND PRESS CONTINUE.

C. THE PROGRAM WILL REQUEST A TEST CHARACTER CODE, AND A DELAY
TIME. THE CHARACTER CODE IS THE DATA THAT THE DC11 WILL BE
TRANSMITTING AND THE DELAY IS THE ELAPSED TIME BETWEEN SUCCES-
SIVE CHARACTERS. PRESS CONTINUE WHEN THIS IS DONE.

D. THE PROGRAM WILL NOW RUN WITHOUT ERROR OR END TYPEOUTS.

4.4 PRG3 - SINGLE CHARACTER MAINT MODE DATA TEST

A. LOAD ADDRESS = 000200
LOAD SR 0-2 = 3, AND PRESS START.
THE DIAGNOSTIC WILL IDENTIFY THE PROGRAM YOU SELECTED, AND
REQUEST THE LINE # YOU WISH TO TEST. LOAD THE LINE # AS REQ-
UESTED AND PRESS CONTINUE.

B. THE PROGRAM WILL REQUEST THE DC11 LINE PARAMETERS. LOAD THE
PARAMETERS AS REQUESTED AND PRESS CONTINUE.

C. THE PROGRAM WILL REQUEST A TEST CHARACTER. LOAD THE TEST CHAR-
ACTER AND PRESS CONTINUE.

D. THE PROGRAM WILL NOW RUN CONTINUOUSLY REPORTING ANY DATA FAIL-
URES.

4.5 PRG4 - SPECIAL BINARY COUNT MAINT. MODE DATA TEST

A. LOAD ADDRESS = 000200

LOAD SR 0-2 = 4, AND PRESS START.
THE DIAGNOSTIC WILL IDENTIFY THE PROGRAM YOU SELECTED, AND
REQUEST THE LINE # YOU WISH TO TEST. LOAD THE LINE # AS REQ-
UESTED AND PRESS CONTINUE.

- B. THE PROGRAM WILL NOW REQUEST THE DC11 LINE PARAMETERS. LOAD THE
PARAMETERS AS REQUESTED AND PRESS CONTINUE.
- C. THE PROGRAM WILL BEGIN TESTING THE LINE YOU SELECTED.
AND REPORT ANY DATA ERRORS.

5. PROGRAM DESCRIPTIONS

5.1 PRGO - INPUT/OUTPUT LOGIC TESTS

THE INPUT/OUTPUT LOGIC TESTS CONSIST OF 103(8) ROUTINES WHICH
MAY BE RUN IN SEQUENTIAL ORDER OR INDIVIDUALLY LOOPED (SEE
SECT 4.1, C FOR SWITCH SETTINGS). THE JUMPER CONNECTOR MUST
BE INSERTED BEFORE STARTING.

5.1.1 ROUTINE DESCRIPTIONS

ROUTINE	TESTS
AT0-AT3 AT4-AT42	ADDRESSABILITY OF CSRS & DBRS DIDDLES ALL BITS IN THE CSRS AND CHECKS THAT THEY CAN BE READ/WRITTEN PROPERLY.
AT43-AT44 AT45-AT51 AT52-AT63	PROPER OPERATION OF RESET INSTRUCTION PROPER OPERATION OF READY BIT PROPER OPERATION OF CHAR LENGTH, SPEED CONTROL AND STOP CODE BITS.
AT64	PROPER OPERATION OF DATA OVERFLOW BIT
AT65-AT74	PROPER OPERATION OF INTERRUPTS
AT75	DATA OVERFLOW CLEARS DONE
AT76	ERROR CAUSES INTERRUPT
AT77	PROPER OPERATION OF PARITY BIT
AT100-AT137	DATA TESTS THESE TESTS TEST ALL POSSIBLE COMBINATIONS OF CHARACTER LENGTH SPEED AND STOP CODES USING MAINT. MODE.
AT140	DATA TEST HIGH SPEED (JUMPER)
AT141	PROPER OPERATION OF BREAK BIT

5.1.2 ERROR DESCRIPTION

IF A ROUTINE FAILS AND THE INHIBIT PRINTOUT SWITCH IS NOT
ENABLED (SR13) A PRINTOUT RESULTS. THE PRINTOUT FORMAT IS:

P(PROG#) T(ROUTINE#) PC=(PC OF ERROR CALL) AND AN
ADDITIONAL/MESSAGE (IF APPLICABLE)

P00 T005 PC=XXXX INDICATING THAT TXCSR BIT 1
WAS SET (SHOULD'VE BEEN CLEAR)

P00 T122 PC=XXXX DATA ERR S/B:---WAS---
INDICATING A DATA ERROR
WHEN DC11 PARAMETERS
WERE SET AT CHAR LENGTH=6
SPEED=00, AND STOP CODE=1

TO RESUME TESTING PRESS CONTINUE. IF ROUTINES 65 OR 71
FAIL DUE TO A BAD TRAP VECTOR, I.E. THE VECTOR PROVIDED
BY THE INTERRUPTING DC11 IS INCORRECT THE PROGRAM WILL
HALT AND DISPLAY THE VECTOR+2 THAT WAS PROVIDED BY THE
INTERRUPTING DC11. TO RECOVER FROM THIS TYPE OF ERROR
IT WILL BE NECESSARY TO PUT INTO THE INCORRECT VECTOR
ADDRESS THE ADDRESS TO RUN THE ROUTINE. I.E. ADDRESS
ATAA AND AXAA FOR ROUTINES 65 AND 71 RESPECTIVELY.

5.1.3 JUMPER CONNECTOR

THE JUMPER CONNECTOR TESTS THOSE F/F'S, GATES (RING INDICATOR,
CARRIER TRANSITION, CLEAR TO SEND, AND SUPERVISORY RECEIVE
DATA) WHICH CANNOT BE TESTED UNLESS A DATA SET IS ACTUALLY
CONNECTED TO THE DC11. IN ADDITION TO TESTING DC11 LOGIC
THE JUMPER ALSO TESTS CABLE WIRING TO/FROM THE DC11/DATA
SET. THE FOLLOWING TESTS WILL FAIL IF THE CABLE IS NOT
INSALLED IN THE DC11:

AT5, AT34-AT42, AT44
AT140 WILL LOOP CONTINUOUSLY

IF THE JUMPER IS REMOVED FROM THE END OF THE CABLE AND THE CABLE
IS LEFT CONNECTED TO THE DC11 THE ABOVE TESTS WILL FAIL WITH THE
PROBABLE EXCEPTIONS OF AT35 AND AT36.

5.2 PRG1-TRANSMITTER SCOPE LOOP

THE PURPOSE OF PRG1 IS TO ALLOW SCOPING OF TRANSMITTER
FUNCTIONS IN A RUN CONDITION USING USER SPECIFIED DC11
PARAMETERS AND DATA. NO ERROR PRINTOUTS ARE PROVIDED.

5.3 PRG2-RECEIVER SCOPE LOOP

THE PURPOSE OF PRG2 IS TO ALLOW SCOPING OF RECEIVER FUNCTIONS
IN A RUN CONDITION USING USER SPECIFIED DC11 PARAMETERS
AND DATA. NO ERROR PRINTOUTS ARE PROVIDED.


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.LIST SEQ,BIN  
:DC11 DIAGNOSTIC PROGRAM (OFF LINE TESTS)  
:COPYRIGHT 1970,1980 DIGITAL EQUIPMENT CORP., MAYNARD, MASS.  
:PRG0- INPUT-OUTPUT LOGIC TESTS  
:PRG1- TRANSMITTER SCOPE LOOP  
:PRG2- RECEIVER SCOPE LOOP  
:PRG3- SINGLE CHARACTER MAINTENANCE MODE DATA TEST  
:PRG4- SPECIAL BINARY COUNT MAINTENANCE MODE DATA TEST  
:STANDARD SR SWITCH OPTIONS (SWITCH SET TO A 1 )  
:  
:SR15- HALT ON ERROR  
:SR14- SCOPE.  
:SR13- INHIBIT PRINTOUT  
:SR12- INHIBIT TRACE  
:SR11- INHIBIT ITERATION.  
:SR10- HALT AT END OF PROGRAM  
:SR9- SELECT ROUTINE.  
:SR8- DISABLE STALL MODE AND RUN FULL SPEED.
```


431 :SR6 THROUGH SRO - NUMBER OF ROUTINE TO BE SELECTED.
 432 :DATA TEST PARAMETERS

	CHAR	LENGTH	SPEED	STOP CODE
433	:			
434	:			
435	:NOTE0	8	00	2
436	:NOTE1	7	00	2
437	:NOTE2	6	00	2
438	:NOTE3	5	00	2
439	:NOTE4	8	01	2
440	:NOTE5	7	01	2
441	:NOTE6	6	01	2
442	:NOTE7	5	01	2
443	:NOTE10	8	10	2
444	:NOTE11	7	10	2
445	:NOTE12	6	10	2
446	:NOTE13	5	10	2
447	:NOTE14	8	11	2
448	:NOTE15	7	11	2
449	:NOTE16	6	11	2
450	:NOTE17	5	11	2
451	:NOTE20	8	00	1
452	:NOTE21	7	00	1
453	:NOTE22	6	00	1
454	:NOTE23	5	00	1
455	:NOTE24	8	01	1
456	:NOTE25	7	01	1
457	:NOTE26	6	01	1
458	:NOTE27	5	01	1
459	:NOTE30	8	10	1
460	:NOTE31	7	10	1
461	:NOTE32	6	10	1
462	:NOTE33	5	10	1
463	:NOTE34	8	11	1
464	:NOTE35	7	11	1
465	:NOTE36	6	11	1
466	:NOTE37	5	11	1

		.LIST	BIN,SEQ	
467				
468				
469		.=0		
470	000000	.+2		:UNASSIGNED TRAP
471	000002	HALT		
472	000004	MACHER: .+2		:SP OVERFLOW, BUS ERROR TRAP
473	000006	HALT		
474	000010	.+2		:RESERVED INSTRUCTION TRAP
475	000012	HALT		
476	000014	.+2		:TRACE TRAP
477	000016	HALT		
478	000020	.+2		:TRAP TO CALL IOX
479	000022	2		
480	000024	.+2		:POWER FAIL TRAP
481	000026	HALT		
482	000030	EMTINT		:EMT TRAP
483	000032	PRTY7		
484	000034	.+2		
485	000036	HALT		
486	000040	.+2		

487	000042	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
488	000044	000046	.+2	
489	000046	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
490	000050	000052	.+2	
491	000052	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
492	000054	000056	.+2	
493	000056	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
494	000060	000062	.+2	
495	000062	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
496	000064	000066	.+2	
497	000066	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
498	000070	000072	.+2	
499	000072	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
500	000074	000076	.+2	
501	000076	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
502	000100	000102	.+2	
503	000102	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
504	000104	000106	.+2	
505	000106	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
506	000110	000112	.+2	
507	000112	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
508	000114	000116	.+2	
509	000116	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
510	000120	000122	.+2	
511	000122	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
512	000124	000126	.+2	
513	000126	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
514	000130	000132	.+2	
515	000132	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
516	000134	000136	.+2	
517	000136	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
518	000140	000142	.+2	
519	000142	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
520	000144	000146	.+2	
521	000146	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
522	000150	000152	.+2	
523	000152	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
524	000154	000156	.+2	
525	000156	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
526	000160	000162	.+2	
527	000162	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
528	000164	000166	.+2	
529	000166	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
530	000170	000172	.+2	
531	000172	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
532	000174	000176	.+2	
533	000176	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
534	000200	000202	.+2	
535	000202	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
536	000204	000206	.+2	
537	000206	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
538	000210	000212	.+2	
539	000212	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
540	000214	000216	.+2	
541	000216	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
542	000220	000222	.+2	

543	000222	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
544	000224	000226	.+2	
545	000226	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
546	000230	000232	.+2	
547	000232	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
548	000234	000236	.+2	
549	000236	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
550	000240	000242	.+2	
551	000242	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
552	000244	000246	.+2	
553	000246	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
554	000250	000252	.+2	
555	000252	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
556	000254	000256	.+2	
557	000256	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
558	000260	000262	.+2	
559	000262	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
560	000264	000266	.+2	
561	000266	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
562	000270	000272	.+2	
563	000272	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
564	000274	000276	.+2	
565	000276	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
566	000300	000302	.+2	
567	000302	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
568	000304	000306	.+2	
569	000306	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
570	000310	000312	.+2	
571	000312	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
572	000314	000316	.+2	
573	000316	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
574	000320	000322	.+2	
575	000322	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
576	000324	000326	.+2	
577	000326	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
578	000330	000332	.+2	
579	000332	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
580	000334	000336	.+2	
581	000336	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
582	000340	000342	.+2	
583	000342	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
584	000344	000346	.+2	
585	000346	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
586	000350	000352	.+2	
587	000352	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
588	000354	000356	.+2	
589	000356	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
590	000360	000362	.+2	
591	000362	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
592	000364	000366	.+2	
593	000366	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
594	000370	000372	.+2	
595	000372	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
596	000374	000376	.+2	
597	000376	000000	HALT	; TRAPPED TO PREVIOUS ADDRESS.
598				


```
599 ;EQUATE STATEMENTS
600 177570 SR=177570
601 177776 CC=177776
602 177776 PSW=177776
603 001076 SPBOT=1076
604 000240 NOP=240
605 000000 OPEN=0
606 100000 MANUAL=BIT15
607 100000 BIT15=100000
608 040000 BIT14=40000
609 020000 BIT13=20000
610 010000 BIT12=10000
611 004000 BIT11=4000
612 002000 BIT10=2000
613 001000 BIT9=1000
614 000400 BIT8=400
615 000200 BIT7=200
616 000100 BIT6=100
617 000040 BIT5=40
618 000020 BIT4=20
619 000010 BIT3=10
620 000004 BIT2=4
621 000002 BIT1=2
622 000001 BIT0=1
623 005726 POPSP=5726
624 022626 POPSP2=022626
625 000340 PRTY7=340
626 000300 PRTY6=300
627 000240 PRTY5=240
628 000200 PRTY4=200
629 000140 PRTY3=140
630 000100 PRTY2=100
631 000040 PRTY1=40
632 000000 PRTY0=0
633 104000 TYPE=EMT+0
634 104001 TYPES=EMT+1
635 104002 STALL=EMT+2
636 104003 ERROR=EMT+3
637 104004 DATCHK=EMT+4
638 104005 CHALT=EMT+5
639 104006 STRXV=EMT+6
640 104007 STTXV=EMT+7
641 104010 EHALT=EMT+10
642 104011 SRESET=EMT+11
643 104012 SCOPE=EMT+12
644 104013 SAVREG=EMT+13
645 104014 RSTREG=EMT+14
646 104015 ERROR1=EMT+15
647 104016 DELAY=EMT+16
648 000007 BELL=007
649 177777 ATLAST=-1
650
651
652 . =200
653 000200 000167 001356 JMP START ;GO TO START OF PROGRAM.
654 . =1100
```

```
;POP THE STACK. SAME AS TST (6)+
;POP STACK TWICE. SAME AS CMP (6)+,(6)+
;PRIORITY LEVEL DEFINITIONS
```


655 001100 174000
656 001102 174002
657 001104 174004
658 001106 174006
659 001110 000000
660 001112 000240
661 001114 000304
662 001116 000240
663 001120 177560
664 001122 177562
665 001124 177564
666 001126 177566
667 001130 000060
668 001132 000200
669 001134 000064
670 001136 000200
671 001140 000000
672 001142 000000
673 001144 000000
674 001146 000000
675 001150 000000
676 001152 000000
677 001154 000000
678 001156 003726
679 001160 014422
680 001162 014466
681 001164 014562
682 001166 014620
683 001170 002456
684 001172 002600
685 001174 002732
686 001176 001406
687 001200 001344
688 001202 000000
689 001204 002302
690 001206 002332
691 001210 001332
692 001212 002362
693 001214 001756
694 001216 002202
695 001220 002242
696 001222 001430
697 001224 002664
698
699
700
701
702
703 001226 000000
704 001230 000000
705 001232 000000
706 001234 000000
707 001236 000000
708 001240 000000
709 001242 000000
710 001244 000000

RXCSR: 174000
RXBUF: 174002
TXCSR: 174004
TXBUF: 174006
RXVTR: OPEN
RXLVL: PRTY5
TXVTR: 304
TXLVL: PRTY5
TKS: 177560
TKB: 177562
TPS: 177564
TPB: 177566
TKVTR: 60
TKLVL: PRTY4
TPVTR: 64
TPLVL: PRTY4
PRGNUM: OPEN
KSTART: OPEN
CURTST: OPEN
RTNNO: OPEN
NXTST: OPEN
ICTR: OPEN
SCOPTR: OPEN
PRGTAB: PRG0
PRG1
PRG2
PRG3
PRG4
EMTTAB: TYP
TYP5
STAL
ERR
DTCHK
OPEN
STLSRV
STLSPV
EHLT
SRSETT
CHAINN
SAVRG
RSTRG
ERR1
DLY

RCNT: OPEN
CRBUF: OPEN
CRBUFA: OPEN
CARMSK: OPEN
CHR1: OPEN
CHR2: OPEN
CHR3: OPEN
ERCTR: OPEN

:RECEIVER CSR
:RECEIVER BUFFER
:TRANSMITTER CSR
:TRANSMITTER BUFFER
:RECEIVER VECTOR
:RECEIVER PRIORITY LEVEL
:TRANSMITTER VECTOR
:TRANSMITTER PRIORITY LEVEL
:LSR CSR
:LSR BUFFER
:LSP CSR
:LSP BUFFER
:LSR INTERRUPT VECTOR
:LSR PRIORITY LEVEL
:LSP INTERRUPT VECTOR
:LSP PRIORITY LEVEL
:CONTAINS CURRENT PROGRAM#
:CURRENT PROGRAM START ADDRESS.
:CONTAINS ADDR OF CURRENT TEST.
:CONTAINS CURRENT TEST #.
:CONTAINS ADDR OF NEXT TEST.
:CONTAINS CURRENT ITERATION COUNT
:CONTAINS CURRENT SCOPE POINTER.
:PRG0 START ADDRESS
:PRG1 START ADDRESS
:PRG2 START ADDRESS
:PRG3 START ADDRESS
:PRG4 START ADDRESS
:POINTER TO TYPEOUT ROUTINE
:POINTER TO CHAINED MESSAGES ROUTINE
:POINTER TO RANDOM STALL ROUTINE
:POINTER TO ERROR ROUTINE

:POINTER TO ERROR HALT ROUTINE.

711	001246	000000			CTRA:	OPEN			
712	001250	000000			CTRB:	OPEN			
713	001252	000000			CTRC:	OPEN			
714	001254	000000			CTRD:	OPEN			
715	001256	000000			TXCSRT:	OPEN			
716	001260	000000			RXCSRT:	OPEN			
717	001262	000000			RXBUFT:	OPEN			
718	001264	000000			TEMP:	OPEN			
719	001266	000000			SRT:	OPEN			
720	001270	177740			STLMSK:	177740			
721	001272	104000			SETSR:	TYPE			;TYPE SELECT OPTION MESSAGE.
722	001274	016433				ASETSR			
723	001276	000000				HALT			;COMMON HALT.
724	001300	000207				RTS	%7		;EXIT.
725	001302	104000			INCRTN:	TYPE			;TYPE INCORRECT ROUTINE SELECTED.
726	001304	016531				AINCRT			
727	001306	000000				HALT			;COMMON HALT.
728	001310	000207				RTS	%7		;EXIT.
729	001312	104000			PRGEND:	TYPE			;TYPE PROGRAM END.
730	001314	016566				APGEND			
731	001316	032767	002000	176244		BIT	#BIT10,SR		;TEST END OF PROGRAM HALT OPTION
732	001324	001401				BEQ	.+4		;BRANCH IF NOT SELECTED
733	001326	000000				HALT			
734	001330	000207				RTS	%7		;EXIT.
735									
736									;CONDITIONAL ERROR HALT ROUTINE.
737	001332	005767	176232		EHLT:	TST	SR		;CHECK FOR HALT ON ERROR.
738	001336	100001				BPL	EHLTA		;BRANCH IF NO HALT DESIRED.
739	001340	000000				HALT			;HALT.
740	001342	000002			EHLTA:	RTI			;IN DATA LIGHTS.
741									
742									;DATA CHECK ROUTINE.
743	001344	026767	177660	177660	DTCHK:	CMP	CRBUF,CRBUFA		;COMPARE EXPECTED AND RECEIVED
744	001352	001414				BEQ	DTCHKA		;CHARS. BRANCH IF SAME.
745	001354	004567	001720			JSR	%5,OACNV		;GO TO OCTAL TO ASCII CONVERT.
746	001360	001230				CRBUF			;SOURCE ADDR.
747	001362	016424				AWAS			;DESTINATION ADDR.
748	001364	000003				3			;#OF DIGITS TO CONVERT.
749	001366	004567	001706			JSR	%5,OACNV		;GO TO OCTAL TO ASCII CONVERT.
750	001372	001232				CRBUFA			;SOURCE ADDR.
751	001374	016412				AASB			;DESTINATION ADDR.
752	001376	000003				3			;#OF DIGITS TO CONVERT.
753	001400	104015				ERROR1			
754	001402	016371				ERDAT			
755	001404	000002			DTCHKA:	RTI			;EXIT.
756									
757									
758	001406	012767	177777	000126	ERR:	MOV	#-1,ERRB		;SET UP ONE MESSAGE CALL.
759	001414	012767	000240	000122		MOV	#240,ERRB+2		
760	001422	005067	000132			CLR	ERRE		
761	001426	000413				BR	ERRA		
762	001430	011667	000106		ERR1:	MOV	@%6,ERRB		;DEVELOP ADDT'L MESSAGE ADDR.
763	001434	017767	000102	000100		MOV	@ERRB,ERRB		;STORE AT ERRB.
764	001442	012767	177777	000074		MOV	#-1,ERRB+2		
765	001450	012767	000002	000102		MOV	#2,ERRE		
766	001456	032767	020000	176104	ERRA:	BIT	#BIT13,SR		;INHIBIT ERROR PRINT?

767	001464	001030			BNE	ERRC			;BRANCH TO INHIBIT PRINT.
768	001466	011667	000064		MOV	@%6,ERRD			;DEVELOP CALLING ADDR.
769	001472	162767	000002	000056	SUB	#2,ERRD			
770	001500	004567	001574		JSR	%5,OACNV			;GO TO OCTAL TO ASCII CONVERT.
771	001504	001556			ERRD				;SOURCE ADDR.
772	001506	015300			APC				;DESTINATION ADDR.
773	001510	000006			6				;#OF DIGITS TO CONVERT.
774	001512	004567	001562		JSR	%5,OACNV			;GO TO OCTAL TO ASCII CONVERT.
775	001516	001140			PRGNUM				;SOURCE ADDR.
776	001520	015263			APNUMB				;DESTINATION ADDR.
777	001522	000002			2				;#OF DIGITS TO CONVERT.
778	001524	004567	001550		JSR	%5,OACNV			;GO TO OCTAL TO ASCII CONVERT.
779	001530	001146			RTNNO				;SOURCE ADDR.
780	001532	015271			ATNUMB				;DESTINATION ADDR.
781	001534	000003			3				;#OF DIGITS TO CONVERT.
782	001536	104001			TYPES				;TYPE:
783	001540	015260			EMO				;ERROR HEADER,
784	001542	000000		ERRB:	OPEN				;ADDT'L ERROR MESSAGE IF ANY.
785	001544	177777			-1				
786	001546	104010			ERRC:	EHALT			;GO ERR HALT IF DESIRED.
787	001550	066716	000004		ADD	ERRE,%6			
788	001554	000002			RTI				;EXIT.
789	001556	000000			ERRD:	OPEN			
790	001560	000000			ERRE:	OPEN			
791									
792									
793	001562			CHGD1:					
794	001562	012706	001076	START:	MOV	#SPBOT,%6			;SET BOTTOM OF SP STACK.
795	001566	004767	000352		JSR	PC,DCACHE			;DISABLE CACHE ;;++C
796	001572	005067	176200		CLR	PSW			
797	001576	012767	000006	176200	MOV	#6,MACHER			
798	001604	005067	177336		CLR	RTNNO			
799	001610	016700	175754		MOV	SR,%0			; (SR) TO R0
800	001614	042700	177770		BIC	#177770,%0			;LIMIT (SR) TO BITS 3-0
801	001620	010067	177314		MOV	%0,PRGNUM			;SAVE PROGRAM #
802	001624	006300			ASL	%0			
803	001626	012767	003644	176170	MOV	#PFAIL,24			
804	001634	012767	000340	176164	MOV	#PRTY7,26			
805	001642	000170	001156		JMP	@PRGTAB(0)			;GO TO SELECTED PROGRAM.
806	001646	016767	177270	177274	GETRDY: MOV	KSTART,NXTST			;ADDR OF 1ST ROUTINE TO NXTST
807	001654	012767	000006	176122	GTRDYX: MOV	#6,MACHER			;RESET MACHER TRAP.
808	001662	005067	176110		CLR	PSW			
809	001666	012706	001076		MOV	#SPBOT,%6			;SET BOTTOM OF STACK.
810	001672	104011			SRESET				;ISSUE RESET.
811	001674	004767	000142		GTRDYA: JSR	%7,FORWD			;ROLL FORWARD TO 'NEXT' ROUTINE.
812	001700	032767	001000	175662	GTRDYB: BIT	#BIT9,SR			;CHECK SELECT ROUTINE SWITCH
813	001706	001003			BNE	GTRDYC			;BRANCH IF SELECT ROUTINE SWITCH IS SET.
814	001710	000177	177230		JMP	@CURTST			;GO RUN CURRENT ROUTINE.
815	001714	000437			BR	CHNB			;NO GO. MANUAL RTN BYPASSED.
816	001716	016700	175646		GTRDYC: MOV	SR,%0			; (SR) TO R0
817	001722	042700	177600		BIC	#177600,%0			;MASK UNDESIRED BITS
818	001726	126700	177214		CMPB	RTNNO,%0			;COMPARE RTNNO TO (R0)
819	001732	001002			BNE	GTRDYD			;BRANCH IF ROUTINE NOT FOUND YET.
820	001734	000177	177204		JMP	@CURTST			;GO RUN ROUTINE.
821	001740	022767	177777	177202	GTRDYD: CMP	#-1,NXTST			;NO. CHECK FOR LAST ROUTINE.
822	001746	001352			BNE	GTRDYA			;BRANCH IF NOT LAST ROUTINE.

823	001750	004767	177326		JSR	%7, INCRTN	:YES. INCORRECT ROUTINE SELECTED.
824	001754	000734			BR	GETRDY	:START OVER.
825	001756	032767	040000	175604	CHAINN:	BIT #BIT14,SR	:CHECK FOR SCOPE OPTION.
826	001764	001403			BEQ	CHNA	:BRANCH IF SCOPE SW NOT SET.
827	001766	016716	177162		CHNAB:	MOV SCOPTR,%X6	:SET UP TO RETURN TO ROUTINE.
828	001772	000002			RTI		:RETURN TO ROUTINE.
829	001774	032767	004000	175566	CHNA:	BIT #BIT11,SR	:TEST INHIBIT ITERATION SWITCH
830	002002	001003			BNE	CHNAA	:BRANCH IF INHIBIT ITERATION SW SET.
831	002004	005367	177142		DEC	ICTR	:DECREMENT ITERATION COUNT.
832	002010	001366			BNE	CHNAB	:BRANCH IF COUNT NOT 0.
833	002012	022626			CHNAA:	POPSP2	:POP STACK TWICE
834							
835	002014	032767	001000	175546	CHNB:	BIT #BIT9,SR	:CHECK SELECT ROUTINE SWITCH
836	002022	001311			BNE	GETRDY	:BRANCH IF SELECT RTN SW SET
837	002024	022767	177777	177116	CMP	#-1,NXTST	:LAST TEST?
838	002032	001310			BNE	GTRDYX	:BRANCH IF NOT LAST TEST.
839	002034	004767	177252		JSR	%7, PRGEND	:PROGRAM END.
840	002040	000702			BR	GETRDY	
841	002042	016705	177102		FORWD:	MOV NXTST,%5	:ADDR OF NEXT ROUTINE TO R5.
842	002046	012567	177074		MOV	(5)+,RTNNO	:GET NEXT ROUTINE NUMBER.
843	002052	012567	177072		MOV	(5)+,NXTST	:GET ADDR OF NEXT 'NEXT' ROUTINE.
844	002056	012567	177070		MOV	(5)+,ICTR	:GET ITERATION COUNT.
845	002062	012567	177066		MOV	(5)+,SCOPTR	:GET SCOPE LOOP ENTRY POINTER.
846	002066	010567	177052		FORWDA:	MOV %5,CURTST	:ADDR OF NOW CURRENT TEST TO CURTST.
847	002072	000207			RTS	%7	:EXIT FORWD SUBROUTINE.
848	002074	012767	177777	177052	FORWDB:	MOV #-1,SCOPTR	:FORCE 'NO SCOPE'
849	002102	012767	000001	177042	MOV	#1,ICTR	:FORCE I COUNT OF 1
850	002110	000766			BR	FORWDA	
851	002112	011646			EMTINT:	MOV @%6,-(6)	:GET SAVED PC.
852	002114	162716	000002		SUB	#2,@%6	:DECREMENT PC BY 2.
853	002120	017616	000000		MOV	@(6),@%6	
854	002124	006316			EMTA:	ASL @%6	:EMT ARG X 2.
855	002126	042716	177001		BIC	#177001,@%6	:REMOVE 7 MSB.
856	002132	062716	001170		ADD	#EMTTAB,@%6	:FORM EMT RTN ADDR.
857	002136	017616	000000		MOV	@(6),@%6	
858	002142	000136			JMP	@(6)+	:GO TO EMT ROUTINE.

859
 860 :SUBROUTINE TO SIZE FOR AN 11/70 CENTRAL PROCESSOR ;:++C
 861 IF IT IS AN 11/70 CPU, CACHE WILL BE DISABLED
 862 IF NOT AN 11/70 CPU, NO ACTION TAKEN
 863

864 :CALLED BY JSR PC,DCACHE
 865 NO ARGUEMENTS PASSED
 866
 867

868	002144	013746	000004		DCACHE:	MOV @#4,-(SP)	:SAVE TRAP INFO
869	002150	012737	002172	000004	MOV	#1\$,@#4	:SETUP FOR TIMEPUT
870	002156	005737	177746		TST	@#177746	:TEST FOR CACHE
871	002162	012737	000014	177746	MOV	#14,@#177746	:DISABLE CACHE
872	002170	000401			BR	2\$:EXIT,CACHE DISABLED.
873	002172	022626			1\$:	CMP (SP)+,(SP)+	:CLEAN UP STACK
874	002174	012637	000004		2\$:	MOV (SP)+,@#4	
875	002200	000207			RTS	PC	:RETURN

876
 877 :SAVE REGS 0 TO 4 SUBROUTINE.
 878 002202 012667 000030 SAVRG: MOV (6)+,SVRPC :SAVE PC AND PSW.


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879 002206 012667 000026      MOV      (6)+,SVRPSW
880 002212 010446      MOV      %4,-(6)          ;SAVE REGS 0 - 4
881 002214 010346      MOV      %3,-(6)          ;IN STACK.
882 002216 010246      MOV      %2,-(6)
883 002220 010146      MOV      %1,-(6)
884 002222 010046      MOV      %0,-(6)
885 002224 016746 000010      MOV      SVRPSW,-(6)      ;RESTORE PC AND PSW.
886 002230 016746 000002      MOV      SVRPC,-(6)
887 002234 000002      RTI
888 002236 000000      SVRPC:  OPEN
889 002240 000000      SVRPSW: OPEN
890      ;RESTORE REGS 0 TO 4 SUBROUTINE.
891 002242 012667 000030      RSTRG:  MOV      (6)+,RSTPC      ;SAVE PC AND PSW.
892 002246 012667 000026      MOV      (6)+,RSTPSW
893 002252 012600      MOV      (6)+,%0          ;RESTORE REGS 0 - 4
894 002254 012601      MOV      (6)+,%1          ;FROM STACK.
895 002256 012602      MOV      (6)+,%2
896 002260 012603      MOV      (6)+,%3
897 002262 012604      MOV      (6)+,%4
898
899 002264 016746 000010      MOV      RSTPSW,-(6)      ;RESTORE PC AND PSW.
900 002270 016746 000002      MOV      RSTPC,-(6)
901 002274 000002      RTI
902 002276 000000      RSTPC:  OPEN
903 002300 000000      RSTPSW: OPEN
904      ;ROUTINE TO SET RECEIVER INTERRUPT VECTOR AND PRIORITY
905 002302 017667 000000 000012  STLSTV: MOV      @ (6),STPRA+2      ;MOVE VECTOR ADDR TO STPRA+2
906 002310 062716 000002      ADD      #2,@%6          ;SET UP EXIT
907 002314 016701 176570      MOV      RXVTR,%1
908 002320 012721 000000      STPRA:  MOV      #OPEN,(1)+      ;SET VECTOR ADDRESS
909 002324 016721 176562      MOV      RXLVL,(1)+      ;SET PRIORITY
910 002330 000002      RTI
911      ;ROUTINE TO SET TRANSMITTER INTERRUPT VECTOR AND PRIORITY.
912 002332 017667 000000 000012  STLSPV: MOV      @ (6),STPPA+2      ;MOVE VECTOR ADDR TO STPPA+2
913 002340 062716 000002      ADD      #2,@%6          ;SET UP EXIT
914 002344 016701 176544      MOV      TXVTR,%1
915 002350 012721 000000      STPPA:  MOV      #OPEN,(1)+      ;SET VECTOR ADDRESS.
916 002354 016721 176536      MOV      TXLVL,(1)+      ;SET PRIORITY
917 002360 000002      RTI
918      ;ROUTINE TO ISSUE RESET.
919 002362 012700 052525      SRSETT: MOV      #52525,%0          ;DATA TO R0.
920 002366 005100      COM      %0              ;COMPLEMENT (R0).
921 002370 010067 177770      MOV      %0,SRSETT+2      ;(R0) TO SRSETT+2.
922 002374 000005      RESET          ;ISSUE RESET. (R0) IS
923 002376 004767 177542      JSR      PC,DCACHE        ;DISABLE CACHE. ;++C
924 002402 000002      RTI
925
926      ;RANDOM NUMBER GENERATOR. ROUTINE EXITS WITH NUMBER IN REGISTER 0.
927 002404 016700 000042      RNGEN:  MOV      RP1,%0
928 002410 006100      ROL      %0
929 002412 006100      ROL      %0
930 002414 066700 000034      ADD      RP2,%0
931 002420 010067 000026      MOV      %0,RP1
932 002424 006100      ROL      %0
933 002426 006100      ROL      %0
934 002430 066700 000020      ADD      RP2,%0
```



```
935 002434 006100          ROL    %0
936 002436 006100          ROL    %0
937 002440 010067 000010   MOV    %0,RP2
938 002444 016700 000002   MOV    RP1,%0
939 002450 000207          RTS                    ;EXIT. NUMBER IN R0
940 002452 001233          RP1:   1233
941 002454 007622          RP2:   7622
942          ;SUBROUTINE TO OUTPUT ASCII MESSAGE ON TELETYPE PRINTER.
943 002456 011600          TYP:   MOV    @%6,%0          ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS.
944 002460 062716 000002   ADD    #2,@%6          ;SET UP EXIT.
945 002464 011000          MOV    @%0,%0          ;ADDRESS OF MESSAGE TO R0.
946 002466 112067 000104   TYPA: MOV    (0)+,TYPDAT      ;GET CHARACTER
947 002472 122767 000100 000076 CMPB   #100,TYPDAT      ;CHECK FOR '@' CHARACTER
948 002500 001001          BNE                    ;BRANCH IF NOT '@'.
949 002502 000002          RTI                    ;TERMINATOR CHAR. DONE. EXIT.
950 002504 122767 000045 000064 TYPB: CMPB   #45,TYPDAT      ;CHECK FOR '%'.
951 002512 001416          BEQ                    ;BRANCH IF '%'.
952 002514 122767 000043 000054 CMPB   #43,TYPDAT      ;NOT '%'. CHECK FOR '#'.
953 002522 001417          BEQ                    ;BRANCH IF '#'.
954 002524 004767 000002   JSR    %7,TYPD          ;TYPE CHAR IN TYPDAT
955 002530 000756          BR     TYPA
956 002532 116777 000040 176366 TYPD: MOV    TYPDAT,@TPB    ;OUTPUT CHARACTER TO PRINTER
957 002540 105777 176360   TSTB   @TPS            ;WAIT FOR DONE FLAG.
958 002544 100375          BPL    -4
959 002546 000207          RTS                    ;EXIT
960 002550 112767 000015 000020 TYPF: MOV    #15,TYPDAT    ;MOVE CARRIAGE RETURN CODE TO TYPDAT
961 002556 004767 177750   JSR    %7,TYPD          ;GO TYPE CHAR.
962 002562 112767 000012 000006 TYPG: MOV    #12,TYPDAT    ;MOVE LF CODE TO TYPDAT.
963 002570 004767 177736   JSR    %7,TYPD          ;GO TYPE CHAR.
964 002574 000734          BR     TYPA
965 002576 000000          TYPDAT: OPEN
966          ;SUBROUTINE TO OUTPUT A SERIES OF ASCII MESSAGES ON TELETYPE PRINTER
967 002600 011600          TYPB: MOV    @%6,%0          ;GET ADDRESS THAT CONTAINS MESSAGE ADDRESS
968 002602 062716 000002   ADD    #2,@%6          ;UPDATE TO NEXT MESSAGE ADDRESS
969 002606 011067 000014   MOV    @%0,TYPSB       ;ADDRESS OF MESSAGE TO TYPSB
970 002612 022767 177777 000006 CMP    #-1,TYPSB       ;CHECK FOR TERMINATOR
971 002620 001001          BNE                    ;BRANCH IF NOT TERMINATOR.
972 002622 000002          RTI                    ;TERMINATOR, EXIT
973 002624 104000          TYPB: TYPE              ;CALL ON TYP SUB TO TYPE MESSAGE
974 002626 000000          TYPSB: OPEN           ;ADDRESS OF MESSAGE GOES HERE
975 002630 000763          BR     TYPB           ;GO PROCESS NEXT MESSAGE
976
977 002632 012701 000300   OVRLAY: MOV    #300,%1    ;GET DC11 VECTOR BASE ADDRESS
978 002636 012702 000302   MOV    #302,%2          ;GET NEXT ADDRESS
979 002642 010221          OVRLYA: MOV    %2,(1)+    ;LOAD VECTOR WITH ADDRESS OF NEXT ADDRESS
980 002644 005021          CLR    (1)+            ;PUT A HALT IN THE NEXT ADDRESS
981 002646 020267 176126   CMP    %2,1000         ;ALL VECTORS BEEN LOADED
982 002652 001403          BEQ    OVRLYB          ;GET NEXT VECTOR ADDRESS
983 002654 062702 000004   ADD    #4,%2
984 002660 000770          BR     OVRLYA
985 002662 000207          OVRLYB: RTS            ;EXIT
986
987          ;SUBROUTINE TO DELAY A SPECIFIED NUMBER OF MILLISECONDS
988 002664 011667 000040   DLY:   MOV    @%6,DLCNT   ;GET DELAY COUNT ADDRESS.
989 002670 062716 000002   ADD    #2,@%6          ;SET UP EXIT ADDRESS
990 002674 017746 000030   MOV    @DLCNT,-(6)     ;DELAY COUNT TO STACK
```


991	002700	001411		BEQ	DLYC		
992	002702	005067	175070	CLR	PSW		;SET PRIORITY 0
993	002706	012746	000554	DLYA: MOV	#554,-(6)		;1 MSEC COUNT TO STACK
994	002712	005316		DLYB: DEC	@%6		;DECREMENT 1 MSEC COUNT
995	002714	001376		BNE	DLYB		;BRANCH IF NOT 0.
996	002716	005726		POPSP			;ZERO. UNCOVER MSECS. COUNT.
997	002720	005316		DEC	@%6		;DECREMENT IT
998	002722	001371		BNE	DLYA		;BR IF NOT DONE DELAYING
999	002724	005726		DLYC: POPSP			;DONE
1000	002726	000002		RTI			;EXIT.
1001	002730	000000		DLCNT: OPEN			;CONTAINS MILLISECONDS COUNT ADDRESS.
1002				;SUBROUTINE TO STALL A RANDOM NUMBER OF MILLISECONDS. MAXIMUM STALL			
1003				;DETERMINED BY CONTENTS OF LOC STLMSK.			
1004	002732	004767	177446	STAL: JSR	%7,RNGEN		;GO GET RANDOM NUMBER.
1005	002736	046700	176326	BIC	STLMSK,%0		;# IN RO. APPLY STALL MASK.
1006	002742	001404		BEQ	STALB		;BRANCH IF RESULT IS 0.
1007	002744	010067	000002	MOV	%0,STALA		
1008	002750	104016		DELAY			;DELAY
1009	002752	000000		STALA: OPEN			;DELAY COUNT
1010	002754	000002		STALB: RTI			;DONE. EXIT.
1011				;SUBROUTINE TO GENERATE RANDOM CHARACTER COUNT			
1012	002756	004767	177422	GRCNT: JSR	%7,RNGEN		;GET RANDOM NUMBER
1013	002762	046700	000010	BIC	RCMSK,%0		;APPLY MASK
1014	002766	001773		BEQ	GRCNT		;TRY AGAIN IF RESULT 0
1015	002770	010067	000004	MOV	%0,RNCNT		;COUNT TO RNCNT
1016	002774	000207		RTS	%7		;EXIT.
1017	002776	000000		RCMSK: OPEN			;RANDOM CHARACTER MASK.
1018	003000	000000		RNCNT: OPEN			;RANDOM CHARACTER COUNT.
1019				;SUBROUTINE TO SELECT LINE AND			
1020	003002	104000		LINSEL: TYPE			
1021	003004	017010		LDLINE			
1022	003006	000000		HALT			
1023	003010	016701	174554	MOV	SR,%1		
1024	003014	042701	177407	BIC	#177407,%1		
1025	003020	010167	176240	MOV	%1,TEMP		
1026	003024	012702	000770	MOV	#770,%2		
1027	003030	012703	001100	MOV	#RXCSR,%3		
1028	003034	012704	000004	MOV	#4,%4		
1029	003040	040213		BIC	%2,(3)		
1030	003042	050123		BIS	%1,(3)+		
1031	003044	005304		DEC	%4		
1032	003046	001374		BNE	.-6		
1033	003050	006201		ASR	%1		;POSITION SELECTED LINE
1034	003052	006201		ASR	%1		
1035	003054	016101	015160	MOV	VECTAB(1),%1		;GET LINE VECTOR ADDRESS
1036	003060	010167	176024	MOV	%1,RXVTR		;LOAD INTO PROGRAM RXVTR
1037	003064	022121		CMP	(1)+,(1)+		;ADD +4
1038	003066	010167	176022	MOV	%1,TVTR		;LOAD INTO PROGRAM TVTR
1039	003072	006267	176166	ASR	TEMP		
1040	003076	006267	176162	ASR	TEMP		
1041	003102	006267	176156	ASR	TEMP		
1042	003106	004567	000166	JSR	5,OACNV		;TYPE LINE #
1043	003112	001264		TEMP			
1044	003114	017061		SELINE			
1045	003116	000002		2			
1046	003120	104000		TYPE			


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1047 003122 017047          ALINE
1048 003124 000205          RTS          5
1049          ;SUBROUTINE TO INITIALIZE BINARY COUNT PATTERNS
1050 003126 012767 177777 000014 INBIN: MOV      #-1,RIND      ;SET ALL VARIABLES
1051 003134 004567 000222          JSR      %5,BMOVE      ;TO MINUS 1.
1052 003140 003150          RIND
1053 003142 003151          RIND+1
1054 003144 000013          11.
1055 003146 000207          RTS      %7          ;EXIT
1056 003150 000000          RIND: OPEN
1057 003152 000000          PTO: OPEN
1058 003154 000000          PT1: OPEN
1059 003156 000000          PIND: OPEN
1060 003160 000000          PTO: OPEN
1061 003162 000000          PT1P: OPEN
1062          ;SPECIAL BINARY COUNT PATTERN SUBROUTINE. EXITS WITH BIN CHAR IN R0
1063 003164 016767 177762 177762 GTBIN: MOV      PTO,PT1      ;PREVIOUS BIN CHAR TO PT1
1064 003172 005167 177756          COM      PT1
1065 003176 005167 177746          COM      RIND
1066 003202 001002          BNE      .+6
1067 003204 005267 177744          INC      PT1
1068 003210 042767 177400 177736 BIC      #177400,PT1      ;MASK TO 8 BITS
1069 003216 016767 177732 177726 MOV      PT1,PT0      ;SAVE BIN CHAR IN PTO
1070 003224 016700 177724          MOV      PT1,%0      ;BIN CHAR TO R0.
1071 003230 000207          RTS      %7          ;EXIT.
1072 003232 016767 177722 177722 GTBINP: MOV      PTO,PT1P      ;PREVIOUS BIN CHAR TO PT1P
1073 003240 005167 177716          COM      PT1P
1074 003244 005167 177706          COM      PIND
1075 003250 001002          BNE      .+6
1076 003252 005267 177704          INC      PT1P
1077 003256 042767 177400 177676 BIC      #177400,PT1P      ;MASK TO 8 BITS.
1078 003264 016767 177672 177666 MOV      PT1P,PTOP      ;SAVE BIN CHAR IN PTO.
1079 003272 016701 177664          MOV      PT1P,%1      ;BIN CHAR TO R1.
1080 003276 000207          RTS      %7          ;EXIT.
1081          ;OCTAL TO ASCII CONVERT ROUTINE
1082 003300 013567 000054          OACNV: MOV      @(%5)+,OACNVX      ;GET OCTAL VALUE.
1083 003304 012501          MOV      (%5)+,%1      ;GET DESTINATION ADDR.
1084 003306 012502          MOV      (%5)+,%2      ;GET CONVERT COUNT.
1085 003310 060201          ADD      %2,%1      ;DEVELOP ADDR TO STORE 1ST CHAR.
1086 003312 016703 000042          OACNVA: MOV      OACNVX,%3
1087 003316 042703 177770          BIC      #177770,%3      ;ISOLATE LEAST SIGNIFICANT DIGIT.
1088 003322 062703 000060          ADD      #60,%3      ;CONVERT DIGIT TO ASCII.
1089 003326 110341          MOV      %3,-(1)      ;STORE ASCII CHARACTER.
1090 003330 042767 000007 000022 BIC      #7,OACNVX
1091 003336 006067 000016          ROR      OACNVX
1092 003342 006067 000012          ROR      OACNVX
1093 003346 006067 000006          ROR      OACNVX
1094 003352 005302          DEC      %2          ;DONE ALL DIGITS?
1095 003354 001356          BNE      OACNVA      ;BRANCH IF NOT DONE.
1096 003356 000205          RTS      %5          ;DONE. EXIT.
1097 003360 000000          OACNVX: OPEN
1098          ;SUBROUTINE TO MOVE A VARIABLE NUMBER OF BYTES.
1099 003362 104013          BMOVE: SAVREG      ;SAVE REGS.
1100 003364 012501          MOV      (%5)+,%1      ;GET 'FROM' ADDRESS
1101 003366 012502          MOV      (%5)+,%2      ;GET 'TO' ADDRESS
1102 003370 012503          MOV      (%5)+,%3      ;GET COUNT

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```
1159
1160 003654 000005          PWRUP: RESET
1161 003656 004767 176262      JSR      PC,DCACHE      ;DISABLE CACHE. ;;++C
1162 003662 012706 001076      MOV      #SPBOT,%6
1163 003666 104003          ERROR
1164 003670 016700 175244      RESTART:MOV     PRGNUM,%0      ;GET PROGRAM NUMBER
1165 003674 006300          ASL      %0
1166 003676 012767 003644 174120  MOV     #PFAIL,24      ;RELOAD POWER FAIL VECTOR
1167 003704 004767 011062      JSR      7,STPARB      ;RELOAD LINE PARAMETERS
1168 003710 000170 003714      JMP      @RSTART(0)    ;GO RESTART SELECTED PROGRAM
1169
1170 003714 003752          RSTART: PRGOA          ;PROGRAM 0 RESTART ADDRESS
1171 003716 014444          PRG1A          ;PROGRAM 1 RESTART ADDRESS
1172 003720 014510          PRG2A          ;PROGRAM 2 RESTART ADDRESS
1173 003722 014604          PRG3A          ;PROGRAM 3 RESTART ADDRESS
1174 003724 014640          PRG4A          ;PROGRAM 4 RESTART ADDRESS
1175
1176          ;PRGO - INPUT-OUTPUT LOGIC TESTS
1177 003726 012767 003756 175206  PRGO:  MOV     #ATO,KSTART
1178 003734 104000          TYPE          ;TYPE TITLE AND INSTRUCTIONS
1179 003736 015311          POTIT
1180 003740 000000          HALT
1181 003742 004567 177034      JSR      5,LINSEL      ;GO GET LINE # FROM USER
1182 003746 004767 175320      JSR      7,SETSR
1183 003752 000167 175670      PRGOA: JMP     GETRDY      ;GET STARTED.
1184          TX=-1
1185
1186          ;*****
1187 003756 000000          ATO:   0          ;TEST NUMBER 0 *
1188 003760 004010          AT1          ;ADDRESS OF NEXT TEST *
1189 003762 001750          1000.        ;TEST ITERATION COUNT *
1190 003764 003766          AAA          ;SCOPE ENTRY POINT *
1191          ;*****
1192          ;TEST ABILITY TO REFERENCE RECEIVER CSR WITHOUT TRAPPING
1193 003766 012767 004002 174010  AAA:  MOV     #AAE,MACHER ;SET UP MACHINE ERROR TRAP.
1194 003774 005777 175100          TST     @RXCSR      ;REFERENCE RXCSR
1195 004000 104012          AAB:  SCOPE      ;OK IF NO TRAP. SCOPE
1196 004002 022626          AAE:  POPSP2
1197 004004 104003          ERROR      ;TRAPPED WHEN REFERENCING RXCSR.
1198 004006 000774          BR     AAB
1199          ;*****
1200 004010 000001          AT1:  1          ;TEST NUMBER 1 *
1201 004012 004042          AT2          ;ADDRESS OF NEXT TEST *
1202 004014 001750          1000.        ;TEST ITERATION COUNT *
1203 004016 004020          ABA          ;SCOPE ENTRY POINT *
1204          ;*****
1205          ;TEST ABILITY TO REFERENCE RECEIVER BUFFER WITHOUT TRAPPING
1206 004020 012767 004034 173756  ABA:  MOV     #ABE,MACHER ;SET UP MACHINE ERROR TRAP.
1207 004026 005777 175050          TST     @RXBUF      ;REFERENCE RXBUF
1208 004032 104012          ABB:  SCOPE      ;OK IF NO TRAP SCOPE
1209 004034 022626          ABE:  POPSP2
1210 004036 104003          ERROR      ;TRAPPED WHEN REFERENCING RXBUF
1211 004040 000774          BR     ABB
1212
1213          ;*****
1214 004042 000002          AT2:  2          ;TEST NUMBER 2 *
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1215 004044 004074 AT3 ;ADDRESS OF NEXT TEST *
1216 004046 001750 1000. ;TEST ITERATION COUNT *
1217 004050 004052 ACA ;SCOPE ENTRY POINT *
1218 000000 TX=TX+1
1219 ;*****
1220 ;TEST ABILITY TO REFERENCE TRANSMITTER CSR WITHOUT TRAPPING.
1221 004052 012767 004066 173724 ACA: MOV #ACE,MACHER ;SET UP MACHINE ERROR TRAP.
1222 004060 005777 175020 TST @TXCSR ;REFERENCE TXCSR
1223 004064 104012 ACB: SCOPE ;SCOPE
1224 004066 022626 ACE: POPSP2
1225 004070 104003 ERROR ;TRAPPED WHEN REFERENCING TXCSR
1226 004072 000774 BR ACB
1227
1228 ;*****
1229 004074 000003 AT3: 3 ;TEST NUMBER 3 *
1230 004076 004126 AT4 ;ADDRESS OF NEXT TEST *
1231 004100 001750 1000. ;TEST ITERATION COUNT *
1232 004102 004104 ADA ;SCOPE ENTRY POINT *
1233 ;*****
1234 ;TEST ABILITY TO REFERENCE TRANSMITTER BUFFER WITHOUT TRAPPING
1235 004104 012767 004120 173672 ADA: MOV #ADE,MACHER ;SET UP MACHINE ERROR TRAP.
1236 004112 005777 174770 TST @TXBUF ;REFERENCE TX BUF.
1237 004116 104012 ADB: SCOPE ;SCOPE
1238 004120 022626 ADE: POPSP2
1239 004122 104003 ERROR ;TRAPPED WHEN REFERENCING TXBUF
1240 004124 000774 BR ADB
1241
1242 ;*****
1243 004126 000004 AT4: 4 ;TEST NUMBER 4 *
1244 004130 004226 AT5 ;ADDRESS OF NEXT TEST *
1245 004132 000144 100. ;TEST ITERATION COUNT *
1246 004134 004136 AEA ;SCOPE ENTRY POINT *
1247 ;*****
1248 ;TEST THAT TXCSR BIT0 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1249 004136 032777 000001 174740 AEA: BIT #BIT0,@TXCSR ;SEE IF TXCSR BIT0 IS CLEAR.
1250 004144 001402 BEQ AEB ;BRANCH IF BIT IS CLEAR.
1251 004146 104003 ERROR ;RESET DID NOT CLEAR TXCSR BIT0
1252 004150 000421 BR AED
1253 004152 052777 000001 174724 AEB: BIS #BIT0,@TXCSR ;SET TXCSR BIT0.
1254 004160 032777 000001 174716 BIT #BIT0,@TXCSR ;SEE IF BIT IS SET.
1255 004166 001002 BNE AEC ;BRANCH IF BIT IS SET.
1256 004170 104003 ERROR ;TXCSR BIT0 FAILED TO SET.
1257 004172 000410 BR AED
1258 004174 042777 000001 174702 AEC: BIC #BIT0,@TXCSR ;CLEAR TXCSR BIT0
1259 004202 032777 000001 174674 BIT #BIT0,@TXCSR ;SEE IF BIT IS CLEAR.
1260 004210 001401 BEQ AED
1261 004212 104003 ERROR ;TXCSR BIT0 FAILED TO CLEAR.
1262 004214 052777 000001 174662 AED: BIS #BIT0,@TXCSR ;SET TXCSR BIT0.
1263 004222 104011 SRESET ;ISSUE RESET TO CLEAR BIT.
1264 004224 104012 SCOPE ;SCOPE
1265 ;*****
1266 004226 000005 AT5: 5 ;TEST NUMBER 5 *
1267 004230 004324 AT6 ;ADDRESS OF NEXT TEST *
1268 004232 000144 100. ;TEST ITERATION COUNT *
1269 004234 004236 AFA ;SCOPE ENTRY POINT *
1270 ;*****
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1271 ;TEST THAT TXCSR BIT1 (CLEAR TO SEND) CAN BE SET, AND CLEARED
1272 004236 042777 000001 174634 AFA: BIC #BIT0,@RXCSR ;CLEAR DATA TERMINAL READY
1273 004244 032777 000002 174632 BIT #BIT1,@TXCSR ;SEE IF TXCSR BIT1 IS CLEAR.
1274 004252 001402 BEQ AFB ;BRANCH IF BIT IS CLEAR.
1275 004254 104003 ERROR ;TXCSR BIT1 IS NOT CLEAR.
1276 004256 000421 BR AFD ;EXIT TEST
1277 004260 052777 000001 174612 AFB: BIS #BIT0,@RXCSR ;SET DATA TERM. RDY. (SETS CTS VIA JUMPER)
1278 004266 032777 000002 174610 BIT #BIT1,@TXCSR ;IS CLEAR TO SEND SET?
1279 004274 001002 BNE AFC ;BRANCH IF SET
1280 004276 104003 ERROR ;CTS NOT BEING SET VIA DTR
1281 004300 000410 BR AFD ;EXIT TEST
1282 004302 042777 000001 174570 AFC: BIC #BIT0,@RXCSR ;CLEAR DATA TERM. RDY.
1283 004310 032777 000002 174566 BIT #BIT1,@TXCSR ;IS CTS CLEAR?
1284 004316 001401 BEQ AFD
1285 004320 104003 ERROR ;CTS FAILED TO CLEAR VIA DTR
1286 004322 104012 AFD: SCOPE ;SCOPE
1287
1288 ;*****
1289 004324 000006 AT6: 6 ;TEST NUMBER 6 *
1290 004326 004424 AT7 ;ADDRESS OF NEXT TEST *
1291 004330 000144 100. ;TEST ITERATION COUNT *
1292 004332 004334 AGA ;SCOPE ENTRY POINT *
1293 ;*****
1294 ;TEST THAT TXCSR BIT2 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1295 004334 032777 000004 174542 AGA: BIT #BIT2,@TXCSR ;SEE IF TXCSR BIT2 IS CLEAR.
1296 004342 001402 BEQ AGB ;BRANCH IF BIT IS CLEAR.
1297 004344 104003 ERROR ;RESET DID NOT CLEAR TXCSR BIT2
1298 004346 000421 BR AGD
1299 004350 052777 000004 174526 AGB: BIS #BIT2,@TXCSR ;SET TXCSR BIT2.
1300 004356 032777 000004 174520 BIT #BIT2,@TXCSR ;SEE IF BIT IS SET.
1301 004364 001002 BNE AGC ;BRANCH IF BIT IS SET.
1302 004366 104003 ERROR ;TXCSR BIT2 FAILED TO SET.
1303 004370 000410 BR AGD
1304 004372 042777 000004 174504 AGC: BIC #BIT2,@TXCSR ;CLEAR TXCSR BIT2
1305 004400 032777 000004 174476 BIT #BIT2,@TXCSR ;SEE IF BIT IS CLEAR.
1306 004406 001401 BEQ AGD
1307 004410 104003 ERROR ;TXCSR BIT2 FAILED TO CLEAR.
1308 004412 052777 000004 174464 AGD: BIS #BIT2,@TXCSR ;SET TXCSR BIT2.
1309 004420 104011 SRESET ;ISSUE RESET TO CLEAR BIT.
1310 004422 104012 SCOPE ;SCOPE
1311 ;*****
1312 004424 000007 AT7: 7 ;TEST NUMBER 7 *
1313 004426 004524 AT10 ;ADDRESS OF NEXT TEST *
1314 004430 000144 100. ;TEST ITERATION COUNT *
1315 004432 004434 AHA ;SCOPE ENTRY POINT *
1316 ;*****
1317 ;TEST THAT TXCSR BIT3 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1318 004434 032777 000010 174442 AHA: BIT #BIT3,@TXCSR ;SEE IF TXCSR BIT3 IS CLEAR.
1319 004442 001402 BEQ AHB ;BRANCH IF BIT IS CLEAR.
1320 004444 104003 ERROR ;RESET DID NOT CLEAR TXCSR BIT3
1321 004446 000421 BR AHD
1322 004450 052777 000010 174426 AHB: BIS #BIT3,@TXCSR ;SET TXCSR BIT3.
1323 004456 032777 000010 174420 BIT #BIT3,@TXCSR ;SEE IF BIT IS SET.
1324 004464 001002 BNE AHC ;BRANCH IF BIT IS SET.
1325 004466 104003 ERROR ;TXCSR BIT3 FAILED TO SET.
1326 004470 000410 BR AHD

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1327 004472 042777 000010 174404 AHC: BIC #BIT3,@TXCSR ;CLEAR TXCSR BIT3
1328 004500 032777 000010 174376 BIT #BIT3,@TXCSR ;SEE IF BIT IS CLEAR.
1329 004506 001401 BEQ AMD
1330 004510 104003 ERROR ;TXCSR BIT3 FAILED TO CLEAR.
1331 004512 052777 000010 174364 AMD: BIS #BIT3,@TXCSR ;SET TXCSR BIT3.
1332 004520 104011 SRESET ;ISSUE RESET TO CLEAR BIT.
1333 004522 104012 SCOPE ;SCOPE
1334
1335
1336 ;*****
1337 004524 000010 AT10: 10 ;TEST NUMBER 10 *
1338 004526 004624 AT11 ;ADDRESS OF NEXT TEST *
1339 004530 000144 100. ;TEST ITERATION COUNT *
1340 004532 004534 AIA ;SCOPE ENTRY POINT *
1341 ;*****
1342 ;TEST THAT TXCSR BIT4 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1343 004534 032777 000020 174342 AIA: BIT #BIT4,@TXCSR ;SEE IF TXCSR BIT4 IS CLEAR.
1344 004542 001402 BEQ AIB ;BRANCH IF BIT IS CLEAR.
1345 004544 104003 ERROR ;RESET DID NOT CLEAR TXCSR BIT4
1346 004546 000421 BR AID
1347 004550 052777 000020 174326 AIB: BIS #BIT4,@TXCSR ;SET TXCSR BIT4.
1348 004556 032777 000020 174320 BIT #BIT4,@TXCSR ;SEE IF BIT IS SET.
1349 004564 001002 BNE AIC ;BRANCH IF BIT IS SET.
1350 004566 104003 ERROR ;TXCSR BIT4 FAILED TO SET.
1351 004570 000410 BR AID
1352 004572 042777 000020 174304 AIC: BIC #BIT4,@TXCSR ;CLEAR TXCSR BIT4
1353 004600 032777 000020 174276 BIT #BIT4,@TXCSR ;SEE IF BIT IS CLEAR.
1354 004606 001401 BEQ AID
1355 004610 104003 ERROR ;TXCSR BIT4 FAILED TO CLEAR.
1356 004612 052777 000020 174264 AID: BIS #BIT4,@TXCSR ;SET TXCSR BIT4.
1357 004620 104011 SRESET ;ISSUE RESET TO CLEAR BIT.
1358 004622 104012 SCOPE ;SCOPE
1359 ;*****
1360 004624 000011 AT11: 11 ;TEST NUMBER 11 *
1361 004626 004732 AT12 ;ADDRESS OF NEXT TEST *
1362 004630 000144 100. ;TEST ITERATION COUNT *
1363 004632 004634 AJA ;SCOPE ENTRY POINT *
1364 ;*****
1365 ;TEST THAT TXCSR BIT6 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1366 004634 012767 000340 173134 AJA: MOV #PRTY7,PSW ;SET PRIORITY 7.
1367 004642 032777 000100 174234 BIT #BIT6,@TXCSR ;SEE IF TXCSR BIT6 IS CLEAR.
1368 004650 001402 BEQ AJB ;BRANCH IF BIT IS CLEAR.
1369 004652 104003 ERROR ;RESET DID NOT CLEAR TXCSR BIT6
1370 004654 000421 BR AJD
1371 004656 052777 000100 174220 AJB: BIS #BIT6,@TXCSR ;SET TXCSR BIT6.
1372 004664 032777 000100 174212 BIT #BIT6,@TXCSR ;SEE IF BIT IS SET.
1373 004672 001002 BNE AJC ;BRANCH IF BIT IS SET.
1374 004674 104003 ERROR ;TXCSR BIT6 FAILED TO SET.
1375 004676 000410 BR AJD
1376 004700 042777 000100 174176 AJC: BIC #BIT6,@TXCSR ;CLEAR TXCSR BIT6
1377 004706 032777 000100 174170 BIT #BIT6,@TXCSR ;SEE IF BIT IS CLEAR.
1378 004714 001401 BEQ AJD
1379 004716 104003 ERROR ;TXCSR BIT6 FAILED TO CLEAR.
1380 004720 052777 000100 174156 AJD: BIS #BIT6,@TXCSR ;SET TXCSR BIT6.
1381 004726 104011 SRESET ;ISSUE RESET TO CLEAR BIT.
1382 004730 104012 SCOPE ;SCOPE
```



```
1383
1384
1385
1386
1387 004732 000012
1388 004734 004754
1389 004736 000144
1390 004740 004742
1391
1392
1393
1394 004742 105777 174136
1395 004746 100401
1396 004750 104003
1397 004752 104012
1398
1399 004754 000013
1400 004756 005054
1401 004760 000144
1402 004762 004764
1403
1404
1405 004764 032777 000400 174112
1406 004772 001402
1407 004774 104003
1408 004776 000421
1409 005000 052777 000400 174076
1410 005006 032777 000400 174070
1411 005014 001002
1412 005016 104003
1413 005020 000410
1414 005022 042777 000400 174054
1415 005030 032777 000400 174046
1416 005036 001401
1417 005040 104003
1418 005042 052777 000400 174034
1419 005050 104011
1420 005052 104012
1421
1422
1423
1424 005054 000014
1425 005056 005100
1426 005060 000144
1427 005062 005064
1428
1429
1430 005064 032777 100000 174012
1431 005072 001401
1432 005074 104003
1433 005076 104012
1434
1435
1436
1437 005100 000015
1438 005102 005172
```

AT12: 12 ;TEST NUMBER 12 *
AT13 ;ADDRESS OF NEXT TEST *
100. ;TEST ITERATION COUNT *
AKA ;SCOPE ENTRY POINT *

;TEST THAT TXCSR BIT 7 (READY BIT) IS SET UPON ENTERING ROUTINE AND
;THAT IT CAN BE READ RELIABLY.
AKA: TSTB @TXCSR ;SEE IF TXCSR BIT 7 IS SET.
BMI AKB ;BRANCH IF SET.
ERROR ;TXCSR BIT 7 NOT SET.
AKB: SCOPE ;SCOPE

AT13: 13 ;TEST NUMBER 13 *
AT14 ;ADDRESS OF NEXT TEST *
100. ;TEST ITERATION COUNT *
ALA ;SCOPE ENTRY POINT *

;TEST THAT TXCSR BIT8 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
ALA: BIT #BIT8,@TXCSR ;SEE IF TXCSR BIT8 IS CLEAR.
BEQ ALB ;BRANCH IF BIT IS CLEAR.
ERROR ;RESET DID NOT CLEAR TXCSR BIT8
BR ALD
ALB: BIS #BIT8,@TXCSR ;SET TXCSR BIT8.
BIT #BIT8,@TXCSR ;SEE IF BIT IS SET.
BNE ALC ;BRANCH IF BIT IS SET.
ERROR ;TXCSR BIT8 FAILED TO SET.
BR ALD
ALC: BIC #BIT8,@TXCSR ;CLEAR TXCSR BIT8
BIT #BIT8,@TXCSR ;SEE IF BIT IS CLEAR.
BEQ ALD
ERROR ;TXCSR BIT8 FAILED TO CLEAR.
ALD: BIS #BIT8,@TXCSR ;SET TXCSR BIT8.
SRESET ;ISSUE RESET TO CLEAR BIT.
SCOPE ;SCOPE

AT14: 14 ;TEST NUMBER 14 *
AT15 ;ADDRESS OF NEXT TEST *
100. ;TEST ITERATION COUNT *
AMA ;SCOPE ENTRY POINT *

;TEST THAT TXCSR BIT15 IS CLEAR AND CAN BE READ RELIABLY.
AMA: BIT #BIT15,@TXCSR ;SEE IF TXCSR BIT15 IS CLEAR.
BEQ AMB ;BRANCH IF BIT IS CLEAR.
ERROR ;TXCSR BIT15 IS NOT CLEAR.
AMB: SCOPE ;SCOPE

AT15: 15 ;TEST NUMBER 15 *
AT16 ;ADDRESS OF NEXT TEST *


```
1439 005104 000144          100.          ;TEST ITERATION COUNT          *
1440 005106 005110          ANA          ;SCOPE ENTRY POINT          *
1441                                     ;*****
1442                                     ;TEST THAT RXCSR BIT 0 (DATA TERMINAL READY) CAN BE SET, NOT CLEARED BY RESET, AND CLEAR
1443 005110 052777 000001 173762 ANA:  BIS  #BIT0,@RXCSR          ;SET RXCSR BIT 0.
1444 005116 032777 000001 173754      BIT  #BIT0,@RXCSR          ;SEE IF BIT IS SET.
1445 005124 001002          BNE  ANB          ;BRANCH IF BIT IS SET.
1446 005126 104003          ERROR
1447 005130 000417          BR   AND
1448 005132 104011          ANB:  SRESET          ;ISSUE RESET.
1449 005134 032777 000001 173736      BIT  #BIT0,@RXCSR          ;SEE IF BIT IS STILL SET.
1450 005142 001002          BNE  ANC          ;BRANCH IF BIT SET.
1451 005144 104003          ERROR          ;RESET CLEARED RXCSR BIT 0.
1452 005146 000410          BR   AND
1453 005150 042777 000001 173722 ANC:  BIC  #BIT0,@RXCSR          ;CLEAR RXCSR BIT 0.
1454 005156 032777 000001 173714      BIT  #BIT0,@RXCSR          ;SEE IF BIT IS CLEAR.
1455 005164 001401          BEQ  AND          ;BRANCH IF BIT IS CLEAR.
1456 005166 104003          ERROR          ;RXCSR BIT 0 FAILED TO CLEAR.
1457 005170 104012          AND:  SCOPE          ;SCOPE
1458                                     ;*****
1459 005172 000016          AT16: 16          ;TEST NUMBER 16
1460 005174 005272          AT17          ;ADDRESS OF NEXT TEST
1461 005176 000144          100.          ;TEST ITERATION COUNT
1462 005200 005202          ANW          ;SCOPE ENTRY POINT
1463                                     ;*****
1464                                     ;TEST THAT RXCSR BIT 1 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT
1465
1466 005202 032777 000002 173670 ANW:  BIT  #BIT1,@RXCSR          ;SEE IF BIT 1 IS CLEAR
1467 005210 001402          BEQ  ANX          ;BRANCH IF CLEAR
1468 005212 104003          ERROR          ;RESET DID NOT CLEAR RXCSR BIT 1
1469 005214 000421          BR   ANZ
1470 005216 052777 000002 173654 ANX:  BIS  #BIT1,@RXCSR          ;SET RXCSR BIT1
1471 005224 032777 000002 173646      BIT  #BIT1,@RXCSR          ;SEE IF BIT IS SET
1472 005232 001002          BNE  ANY          ;BRANCH IF SET
1473 005234 104003          ERROR          ;RXCSR BIT 1 FAILED TO SET
1474 005236 000410          BR   ANZ
1475 005240 042777 000002 173632 ANY:  BIC  #BIT1,@RXCSR          ;CLEAR RXCSR BIT 1
1476 005246 032777 000002 173624      BIT  #BIT1,@RXCSR          ;SEE IF BIT IS CLEAR
1477 005254 001401          BEQ  ANZ
1478 005256 104003          ERROR          ;RXCSR BIT 1 FAILED TO CLEAR
1479 005260 052777 000002 173612 ANZ:  BIS  #BIT1,@RXCSR          ;SET RXCSR BIT 1
1480 005266 104011          SRESET          ;ISSUE RESET TO CLEAR BIT
1481 005270 104012          SCOPE          ;SCOPE
1482
1483                                     ;*****
1484 005272 000017          AT17: 17          ;TEST NUMBER 17          *
1485 005274 005316          AT20          ;ADDRESS OF NEXT TEST          *
1486 005276 000144          100.          ;TEST ITERATION COUNT          *
1487 005300 005302          APA          ;SCOPE ENTRY POINT          *
1488                                     ;*****
1489                                     ;TEST THAT RXCSR BIT2 IS CLEAR AND CAN BE READ RELIABLY.
1490 005302 032777 000004 173570 APA:  BIT  #BIT2,@RXCSR          ;SEE IF RXCSR BIT2 IS CLEAR.
1491 005310 001401          BEQ  APB          ;BRANCH IF BIT IS CLEAR.
1492 005312 104003          ERROR          ;RXCSR BIT2 IS NOT CLEAR.
1493 005314 104012          APB:  SCOPE          ;SCOPE
1494                                     ;*****
```



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1495 005316 000020 AT20: 20 ;TEST NUMBER 20 *
1496 005320 005416 AT21 ;ADDRESS OF NEXT TEST *
1497 005322 000144 100. ;TEST ITERATION COUNT *
1498 005324 005326 AQA ;SCOPE ENTRY POINT *
1499
1500 ;*****
1501 005326 032777 000010 173544 AQA: BIT #BIT3,@RXCSR ;TEST THAT RXCSR BIT3 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1502 005334 001402 BEQ AQB ;SEE IF RXCSR BIT3 IS CLEAR.
1503 005336 104003 ERROR ;BRANCH IF BIT IS CLEAR.
1504 005340 000421 BR AQB ;RESET DID NOT CLEAR RXCSR BIT3
1505 005342 052777 000010 173530 AQB: BIS #BIT3,@RXCSR ;SET RXCSR BIT3.
1506 005350 032777 000010 173522 BIT #BIT3,@RXCSR ;SEE IF BIT IS SET.
1507 005356 001002 BNE AQC ;BRANCH IF BIT IS SET.
1508 005360 104003 ERROR ;RXCSR BIT3 FAILED TO SET.
1509 005362 000410 BR AQC
1510 005364 042777 000010 173506 AQC: BIC #BIT3,@RXCSR ;CLEAR RXCSR BIT3
1511 005372 032777 000010 173500 BIT #BIT3,@RXCSR ;SEE IF BIT IS CLEAR.
1512 005400 001401 BEQ AQB
1513 005402 104003 ERROR ;RXCSR BIT3 FAILED TO CLEAR.
1514 005404 052777 000010 173466 AQB: BIS #BIT3,@RXCSR ;SET RXCSR BIT3.
1515 005412 104011 SRESET ;ISSUE RESET TO CLEAR BIT.
1516 005414 104012 SCOPE ;SCOPE
1517
1518 005416 000021 AT21: 21 ;TEST NUMBER 21 *
1519 005420 005516 AT22 ;ADDRESS OF NEXT TEST *
1520 005422 000144 100. ;TEST ITERATION COUNT *
1521 005424 005426 ARA ;SCOPE ENTRY POINT *
1522
1523 ;*****
1524 005426 032777 000020 173444 ARA: BIT #BIT4,@RXCSR ;TEST THAT RXCSR BIT4 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1525 005434 001402 BEQ ARB ;SEE IF RXCSR BIT4 IS CLEAR.
1526 005436 104003 ERROR ;BRANCH IF BIT IS CLEAR.
1527 005440 000421 BR ARB ;RESET DID NOT CLEAR RXCSR BIT4
1528 005442 052777 000020 173430 ARB: BIS #BIT4,@RXCSR ;SET RXCSR BIT4.
1529 005450 032777 000020 173422 BIT #BIT4,@RXCSR ;SEE IF BIT IS SET.
1530 005456 001002 BNE ARC ;BRANCH IF BIT IS SET.
1531 005460 104003 ERROR ;RXCSR BIT4 FAILED TO SET.
1532 005462 000410 BR ARC
1533 005464 042777 000020 173406 ARC: BIC #BIT4,@RXCSR ;CLEAR RXCSR BIT4
1534 005472 032777 000020 173400 BIT #BIT4,@RXCSR ;SEE IF BIT IS CLEAR.
1535 005500 001401 BEQ ARD
1536 005502 104003 ERROR ;RXCSR BIT4 FAILED TO CLEAR.
1537 005504 052777 000020 173366 ARD: BIS #BIT4,@RXCSR ;SET RXCSR BIT4.
1538 005512 104011 SRESET ;ISSUE RESET TO CLEAR BIT.
1539 005514 104012 SCOPE ;SCOPE
1540
1541
1542 005516 000022 AT22: 22 ;TEST NUMBER 22 *
1543 005520 005542 AT23 ;ADDRESS OF NEXT TEST *
1544 005522 000144 100. ;TEST ITERATION COUNT *
1545 005524 005526 ARBA ;SCOPE ENTRY POINT *
1546
1547 ;*****
1548 ;TEST THAT PARITY INDICATOR (BIT5 RXCSR) IS CLEAR
1549 ;AND CAN BE READ RELIABLY.
1550 005526 032777 000040 173344 ARBA: BIT #BIT5,@RXCSR ;SEE IF PARITY INDICATOR IS CLEAR
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1551 005534 001401          BEQ      ARBB          ;BRANCH IF CLEAR
1552 005536 104003          ERROR          ;IS NOT CLEAR
1553 005540 104012          ARBB:  SCOPE        ;SCOPE
1554
1555
1556 005542 000023          AT23:  23          ;TEST NUMBER 23
1557 005544 005650          AT24          ;ADDRESS OF NEXT TEST
1558 005546 000144          100.          ;TEST ITERATION COUNT
1559 005550 005552          ASA          ;SCOPE ENTRY POINT
1560
1561
1562 005552 012767 000340 172216  ;TEST THAT RXCSR BIT6 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1563 005560 032777 000100 173312  ASA:  MOV      #PRTY7,PSW ;SET PRIORITY 7.
1564 005566 001402          BIT      #BIT6,@RXCSR ;SEE IF RXCSR BIT6 IS CLEAR.
1565 005570 104003          BEQ      ASB          ;BRANCH IF BIT IS CLEAR.
1566 005572 000421          ERROR          ;RESET DID NOT CLEAR RXCSR BIT6
1567 005574 052777 000100 173276  BR      ASD          ;SET RXCSR BIT6.
1568 005602 032777 000100 173270  ASB:  BIS      #BIT6,@RXCSR ;SEE IF BIT IS SET.
1569 005610 001002          BIT      #BIT6,@RXCSR ;BRANCH IF BIT IS SET.
1570 005612 104003          BNE      ASC          ;RXCSR BIT6 FAILED TO SET.
1571 005614 000410          ERROR          ;
1572 005616 042777 000100 173254  BR      ASD          ;CLEAR RXCSR BIT6
1573 005624 032777 000100 173246  ASC:  BIC      #BIT6,@RXCSR ;SEE IF BIT IS CLEAR.
1574 005632 001401          BIT      #BIT6,@RXCSR ;
1575 005634 104003          BEQ      ASD          ;RXCSR BIT6 FAILED TO CLEAR.
1576 005636 052777 000100 173234  ASD:  BIS      #BIT6,@RXCSR ;SET RXCSR BIT6.
1577 005644 104011          SRESET          ;ISSUE RESET TO CLEAR BIT.
1578 005646 104012          SCOPE          ;SCOPE
1579
1580 005650 000024          AT24:  24          ;TEST NUMBER IS 24
1581 005652 005674          AT25          ;ADDRESS OF NEXT TEST
1582 005654 000144          100.          ;TEST ITERATION COUNT
1583 005656 005660          ATA          ;SCOPE ENTRY POINT
1584
1585
1586 005660 032777 000200 173212  ;TEST THAT RXCSR BIT7 IS CLEAR AND CAN BE READ RELIABLY.
1587 005666 001401          ATA:  BIT      #BIT7,@RXCSR ;SEE IF RXCSR BIT7 IS CLEAR.
1588 005670 104003          BEQ      ATB          ;BRANCH IF BIT IS CLEAR.
1589 005672 104012          ERROR          ;RXCSR BIT7 IS NOT CLEAR.
1590
1591
1592 005674 000025          AT25:  25          ;TEST NUMBER 25
1593 005676 005774          AT26          ;ADDRESS OF NEXT TEST
1594 005700 000144          100.          ;TEST ITERATION COUNT
1595 005702 005704          AUA          ;SCOPE ENTRY POINT
1596
1597
1598 005704 032777 000400 173166  ;TEST THAT RXCSR BIT8 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1599 005712 001402          AUA:  BIT      #BIT8,@RXCSR ;SEE IF RXCSR BIT8 IS CLEAR.
1600 005714 104003          BEQ      AUB          ;BRANCH IF BIT IS CLEAR.
1601 005716 000421          ERROR          ;RESET DID NOT CLEAR RXCSR BIT8
1602 005720 052777 000400 173152  BR      AUD          ;SET RXCSR BIT8.
1603 005726 032777 000400 173144  AUB:  BIS      #BIT8,@RXCSR ;SEE IF BIT IS SET.
1604 005734 001002          BIT      #BIT8,@RXCSR ;BRANCH IF BIT IS SET.
1605 005736 104003          BNE      AUC          ;RXCSR BIT8 FAILED TO SET.
1606 005740 000410          ERROR          ;
1606 005740 000410          BR      AUD          ;
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1607 005742 042777 000400 173130 AUC: BIC #BIT8,@RXCSR ;CLEAR RXCSR BIT8
1608 005750 032777 000400 173122 BIT #BIT8,@RXCSR ;SEE IF BIT IS CLEAR.
1609 005756 001401 BEQ AUD
1610 005760 104003 ERROR ;RXCSR BIT8 FAILED TO CLEAR.
1611 005762 052777 000400 173110 AUD: BIS #BIT8,@RXCSR ;SET RXCSR BIT8.
1612 005770 104011 SRESET ;ISSUE RESET TO CLEAR BIT.
1613 005772 104012 SCOPE ;SCOPE
1614 ;*****
1615 005774 000026 AT26: 26 ;TEST NUMBER 26 *
1616 005776 006074 AT27 ;ADDRESS OF NEXT TEST *
1617 006000 000144 100. ;TEST ITERATION COUNT *
1618 006002 006004 AVA ;SCOPE ENTRY POINT *
1619 ;*****
1620 ;TEST THAT RXCSR BIT9 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1621 006004 032777 001000 173066 AVA: BIT #BIT9,@RXCSR ;SEE IF RXCSR BIT9 IS CLEAR.
1622 006012 001402 BEQ AVB ;BRANCH IF BIT IS CLEAR.
1623 006014 104003 ERROR ;RESET DID NOT CLEAR RXCSR BIT9
1624 006016 000421 BR AVD
1625 006020 052777 001000 173052 AVB: BIS #BIT9,@RXCSR ;SET RXCSR BIT9.
1626 006026 032777 001000 173044 BIT #BIT9,@RXCSR ;SEE IF BIT IS SET.
1627 006034 001002 BNE AVC ;BRANCH IF BIT IS SET.
1628 006036 104003 ERROR ;RXCSR BIT9 FAILED TO SET.
1629 006040 000410 BR AVD
1630 006042 042777 001000 173030 AVC: BIC #BIT9,@RXCSR ;CLEAR RXCSR BIT9
1631 006050 032777 001000 173022 BIT #BIT9,@RXCSR ;SEE IF BIT IS CLEAR.
1632 006056 001401 BEQ AVD
1633 006060 104003 ERROR ;RXCSR BIT9 FAILED TO CLEAR.
1634 006062 052777 001000 173010 AVD: BIS #BIT9,@RXCSR ;SET RXCSR BIT9.
1635 006070 104011 SRESET ;ISSUE RESET TO CLEAR BIT.
1636 006072 104012 SCOPE ;SCOPE
1637 ;*****
1638 006074 000027 AT27: 27 ;TEST NUMBER 27 *
1639 006076 006174 AT30 ;ADDRESS OF NEXT TEST *
1640 006100 000144 100. ;TEST ITERATION COUNT *
1641 006102 006104 AWA ;SCOPE ENTRY POINT *
1642 ;*****
1643 ;TEST THAT RXCSR BIT10 CAN BE SET, CLEARED, AND THAT RESET CLEARS IT.
1644 006104 032777 002000 172766 AWA: BIT #BIT10,@RXCSR ;SEE IF RXCSR BIT10 IS CLEAR.
1645 006112 001402 BEQ AWB ;BRANCH IF BIT IS CLEAR.
1646 006114 104003 ERROR ;RESET DID NOT CLEAR RXCSR BIT10
1647 006116 000421 BR AWD
1648 006120 052777 002000 172752 AWB: BIS #BIT10,@RXCSR ;SET RXCSR BIT10.
1649 006126 032777 002000 172744 BIT #BIT10,@RXCSR ;SEE IF BIT IS SET.
1650 006134 001002 BNE AWC ;BRANCH IF BIT IS SET.
1651 006136 104003 ERROR ;RXCSR BIT10 FAILED TO SET.
1652 006140 000410 BR AWD
1653 006142 042777 002000 172730 AWC: BIC #BIT10,@RXCSR ;CLEAR RXCSR BIT10
1654 006150 032777 002000 172722 BIT #BIT10,@RXCSR ;SEE IF BIT IS CLEAR.
1655 006156 001401 BEQ AWD
1656 006160 104003 ERROR ;RXCSR BIT10 FAILED TO CLEAR.
1657 006162 052777 002000 172710 AWD: BIS #BIT10,@RXCSR ;SET RXCSR BIT10.
1658 006170 104011 SRESET ;ISSUE RESET TO CLEAR BIT.
1659 006172 104012 SCOPE ;SCOPE
1660 ;*****
1661 006174 000030 AT30: 30 ;TEST NUMBER 30 *
1662 006176 006220 AT31 ;ADDRESS OF NEXT TEST *
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1663 006200 000144          100.          ;TEST ITERATION COUNT *
1664 006202 006204          AXA          ;SCOPE ENTRY POINT *
1665                      ;*****
1666                      ;TEST THAT RXCSR BIT12 IS CLEAR AND CAN BE READ RELIABLY.
1667 006204 032777 010000 172666 AXA:  BIT    #BIT12,@RXCSR ;SEE IF RXCSR BIT12 IS CLEAR.
1668 006212 001401          BEQ    AXB          ;BRANCH IF BIT IS CLEAR.
1669 006214 104003          ERROR          ;RXCSR BIT12 IS NOT CLEAR.
1670 006216 104012          AXB:  SCOPE          ;SCOPE
1671
1672                      ;*****
1673 006220 000031          AT31:  31          ;TEST NUMBER 31 *
1674 006222 006244          AT32          ;ADDRESS OF NEXT TEST *
1675 006224 000144          100.          ;TEST ITERATION COUNT *
1676 006226 006230          AYA          ;SCOPE ENTRY POINT *
1677                      ;*****
1678                      ;TEST THAT RXCSR BIT13 IS CLEAR AND CAN BE READ RELIABLY.
1679 006230 032777 020000 172642 AYA:  BIT    #BIT13,@RXCSR ;SEE IF RXCSR BIT13 IS CLEAR.
1680 006236 001401          BEQ    AYB          ;BRANCH IF BIT IS CLEAR.
1681 006240 104003          ERROR          ;RXCSR BIT13 IS NOT CLEAR.
1682 006242 104012          AYB:  SCOPE          ;SCOPE
1683
1684                      ;*****
1685                      ;TEST THAT RXCSR BIT14 IS CLEAR AND CAN BE READ RELIABLY.
1686 006244 000032          AT32:  32          ;TEST NUMBER 32 *
1687 006246 006270          AT33          ;ADDRESS OF NEXT TEST *
1688 006250 000144          100.          ;TEST ITERATION COUNT *
1689 006252 006254          AZA          ;SCOPE ENTRY POINT *
1690                      ;*****
1691                      ;TEST THAT RXCSR BIT14 IS CLEAR AND CAN BE READ RELIABLY.
1692 006254 032777 040000 172616 AZA:  BIT    #BIT14,@RXCSR ;SEE IF RXCSR BIT14 IS CLEAR.
1693 006262 001401          BEQ    AZB          ;BRANCH IF BIT IS CLEAR.
1694 006264 104003          ERROR          ;RXCSR BIT14 IS NOT CLEAR.
1695 006266 104012          AZB:  SCOPE          ;SCOPE
1696                      ;*****
1697 006270 000033          AT33:  33          ;TEST NUMBER 33 *
1698 006272 006314          AT34          ;ADDRESS OF NEXT TEST *
1699 006274 000144          100.          ;TEST ITERATION COUNT *
1700 006276 006300          AAAA          ;SCOPE ENTRY POINT *
1701                      ;*****
1702                      ;TEST THAT RXCSR BIT15 IS CLEAR AND CAN BE READ RELIABLY.
1703 006300 032777 100000 172572 AAAA:  BIT    #BIT15,@RXCSR ;SEE IF RXCSR BIT15 IS CLEAR.
1704 006306 001401          BEQ    AAAB          ;BRANCH IF BIT IS CLEAR.
1705 006310 104003          ERROR          ;RXCSR BIT15 IS NOT CLEAR.
1706 006312 104012          AAAB:  SCOPE          ;SCOPE
1707
1708                      ;ALL PREVIOUS TESTS MUST HAVE BEEN RUN SUCCESSFULLY PRIOR
1709                      ;TO RUNNING THE FOLLOWING TESTS. ALSO, THE JUMPER CONNECTOR
1710                      ;MUST BE INSERTED IN THE DC11 CABLE. TO THE MODEM. COMMENTS
1711                      ;REFER TO OPERATION WITH JUMPER INSERTED.
1712                      ;
1713                      ;*****
1714                      ;TEST THAT RXCSR BIT15 IS CLEAR AND CAN BE READ RELIABLY.
1715 006314 000034          AT34:  34          ;TEST NUMBER 34 *
1716 006316 006372          AT35          ;ADDRESS OF NEXT TEST *
1717 006320 000144          100.          ;TEST ITERATION COUNT *
1718 006322 006324          AFBA          ;SCOPE ENTRY POINT *
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1719 ;*****
1720 ;TEST THAT CARRIER DETECT SETS AND CLEARS WHEN DATA TERMINAL
1721 ;READY SETS AND CLEARS.
1722 ;
1723 006324 052777 000001 172546 AFBA: BIS #BIT0,@RXCSR ;SET DATA TERMINAL READY
1724 006332 032777 000004 172540 BIT #BIT2,@RXCSR ;TEST CARRIER DETECT
1725 006340 001002 BNE AFBB ;SHOULD BE SET
1726 006342 104003 ERROR ;WASN'T
1727 006344 000410 BR AFBC
1728 006346 042777 000001 172524 AFBB: BIC #BIT0,@RXCSR ;CLEAR DATA TERMINAL READY
1729 006354 032777 000004 172516 BIT #BIT2,@RXCSR ;TEST CARRIER DETECT
1730 006362 001401 BEQ AFBC
1731 006364 104003 ERROR ;WAS SET, ERROR
1732 006366 104011 AFBC: SRESET
1733 006370 104012 SCOPE
1734 ;*****
1735 006372 000035 AT35: 35 ;TEST NUMBER 35
1736 006374 006532 AT36 ;ADDRESS OF NEXT TEST
1737 006376 000144 100. ;TEST ITERATION COUNT
1738 006400 006402 AGBA ;SCOPE ENTRY POINT
1739 ;*****
1740 ;TEST THAT CARRIER TRANSITION (BIT 14) SETS WHEN CARRIER DETECT
1741 ;CHANGES STATE, AND IS CLEARED WHEN RXCSR IS READ.
1742 ;
1743 006402 042777 000001 172470 AGBA: BIC #BIT0,@RXCSR ;CLEAR DATA TERMINAL READY
1744 006410 017767 172464 172642 MOV @RXCSR,RXCSR ;READ RXCSR
1745 006416 032777 040000 172454 BIT #BIT14,@RXCSR ;TEST CARRIER TRANSITION
1746 006424 001402 BEQ AGBB ;WAS CLEAR GO TO AGBB
1747 006426 104003 ERROR ;WASN'T CLEAR
1748 006430 000436 BR AGBE ;GO TO SCOPE
1749 006432 005277 172442 AGBB: INC @RXCSR ;SETTING DATA TERMINAL READY
1750 006436 000004 IOT ;CAUSES CARRIER DETECT TO SET
1751 ;WHICH CAUSES CARRIER TRANSITION
1752 ;TO SET.
1753 006440 017767 172434 172612 MOV @RXCSR,RXCSR ;MOVE RXCSR TO TEMPORARY LOCATION
1754 006446 032767 040000 172604 BIT #BIT14,RXCSR ;TEST CARRIER TRANSITION
1755 006454 001002 BNE AGBC ;SHOULD BE SET GO TO AGBC
1756 006456 104003 ERROR ;WAS CLEAR
1757 006460 000422 BR AGBE ;GO TO SCOPE
1758 006462 032777 040000 172410 AGBC: BIT #BIT14,@RXCSR ;CARRIER TRANSITION BIT SHOULD
1759 ;HAVE BEEN CLEARED
1760 006470 001402 BEQ AGBD ;IT WAS GO TO AGBD
1761 006472 104003 ERROR ;IT WASN'T
1762 006474 000414 BR AGBE ;GO TO SCOPE
1763 ;
1764 006476 042777 000001 172374 AGBD: BIC #BIT0,@RXCSR ;CLEARING DATA TERMINAL READY
1765 ;CAUSES CARRIER DETECT TO CLEAR
1766 ;BUT CARRIER TRANSITION
1767 ;WILL NOT SET
1768 006504 017767 172370 172546 MOV @RXCSR,RXCSR ;MOV RXCSR TO TEMPORARY LOCATION
1769 006512 032767 040000 172540 BIT #BIT14,RXCSR ;TEST CARRIER TRANSITION
1770 006520 001402 BEQ AGBE ;SHOULD BE CLEAR
1771 006522 104003 ERROR ;IT WASN'T
1772 006524 000400 BR AGBE
1773 006526 104011 AGBE: SRESET ;ISSUE RESET
1774 006530 104012 SCOPE ;SCOPE
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1775 ;*****
1776
1777 006532 000036 AT36: 36 ;TEST NUMBER 36
1778 006534 006646 AT37 ;ADDRESS OF NEXT TEST
1779 006536 000144 100. ;TEST ITERATION COUNT
1780 006540 006542 AMBA ;SCOPE ENTRY POINT
1781 ;*****
1782 ;TEST THAT CARRIER TRANSITION SETTING CAUSES ERROR (BIT 15 RXCSR) TO
1783 ;SET AND THAT READING RXCSR CLEARS ERROR.
1784
1785 006542 042777 000001 172330 AMBA: BIC #BIT0,@RXCSR ;CLEAR DATA TERMINAL READY
1786 006550 005277 172324 INC @RXCSR ;SET DATA TERMINAL READY
1787 006554 000004 IOT
1788 006556 017767 172316 172474 MOV @RXCSR,+RXCSRT ;MOVE RXCSR TO TEMPORARY LOCATION
1789 006564 032767 100000 172466 BIT #BIT15,RXCSRT ;TEST ERROR BIT
1790 006572 001002 BNE AMBB ;ERROR BIT SHOULD BE SET
1791 006574 104003 ERROR
1792 006576 000421 BR AMBD
1793 006600 032777 100000 172272 AMBB: BIT #BIT15,@RXCSR ;TEST ERROR BIT
1794 006606 001402 BEQ AMBC ;SHOULD BE CLEAR
1795 006610 104003 ERROR
1796 006612 000413 BR AMBD
1797 006614 042777 000001 172256 AMBC: BIC #BIT0,@RXCSR ;CLEAR DATA TERMINAL READY
1798 006622 017767 172252 172430 MOV @RXCSR,RXCSRT ;MOV RXCSR TO TEMPORARY LOCATION
1799 006630 032767 100000 172422 BIT #BIT15,RXCSRT ;TEST ERROR BIT
1800 006636 001401 BEQ AMBD ;SHOULD BE CLEAR
1801 006640 104003 ERROR
1802 006642 104011 AMBD: SRESET ;ISSUE RESET
1803 006644 104012 SCOPE ;SCOPE
1804
1805
1806 ;*****
1807 006646 000037 AT37: 37 ;TEST NUMBER 37
1808 006650 006742 AT40 ;ADDRESS OF NEXT TEST
1809 006652 000144 100. ;TEST ITERATION COUNT
1810 006654 006656 AJBA ;SCOPE ENTRY POINT
1811 ;*****
1812 ;TEST THAT CLEAR TO SEND (BIT1) SET/CLEARS WHEN DATA TERMINAL
1813 ;READY SETS/CLEARS.
1814
1815 006656 042777 000001 172214 AJBA: BIC #BIT0,@RXCSR ;CLEAR DATA TERMINAL READY
1816 006664 032777 000004 172212 BIT #BIT2,@TXCSR ;TEST CLEAR TO SEND
1817 006672 001400 BEQ AJBB
1818
1819
1820 006674 052777 000001 172176 AJBB: BIS #BIT0,@RXCSR ;SET DATA TERMINAL READY
1821 006702 032777 000002 172174 BIT #BIT1,@TXCSR ;TEST CLEAR TO SEND
1822 006710 001002 BNE AJBC ;BRANCH IF SET
1823 006712 104003 ERROR ;CLEAR TO SEND SHOULD BE SET
1824 006714 000410 BR AJBD
1825 006716 042777 000001 172154 AJBC: BIC #BIT0,@RXCSR ;CLEAR DATA TERMINAL READY
1826 006724 032777 000002 172152 BIT #BIT1,@TXCSR ;TEST CLEAR TO SEND
1827 006732 001401 BEQ AJBD
1828 006734 104003 ERROR ;CLEAR TO SEND SHOULD BE CLEAR
1829 006736 104011 AJBD: SRESET ;ISSUE RESET
1830 006740 104012 SCOPE ;SCOPE
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1831 :*****
1832 006742 000040 AT40: 40 ;TEST NUMBER 40
1833 006744 007060 AT41 ;ADDRESS OF NEXT TEST
1834 006746 000144 100. ;TEST ITERATION COUNT
1835 006750 006752 AKBA ;SCOPE ENTRY POINT
1836 :*****
1837 :TEST THAT RING (BIT 13 RXCSR) SETS WHEN REQUEST TO
1838 :SEND SETS AND THEN CLEARS; AND RING CLEARS WHEN RXCSR IS READ.
1839 :AND THAT RESET CLEARS RING.
1840
1841 006752 042777 000001 172124 AKBA: BIC #BIT0,@TXCSR ;CLEAR REQUEST TO SEND
1842 006760 052777 000001 172116 AKBB: BIS #BIT0,@TXCSR ;SET REQUEST TO SEND
1843 006766 042777 000001 172110 BIC #BIT0,@TXCSR
1844 006774 032777 020000 172076 BIT #BIT13,@RXCSR ;TEST RING
1845 007002 001002 BNE AKBC
1846 007004 104003 ERROR ;RING SHOULD BE SET
1847 007006 000422 BR AKBE
1848 007010 032777 020000 172062 AKBC: BIT #BIT13,@RXCSR ;TEST RING
1849 007016 001402 BEQ AKBD
1850 007020 104003 ERROR ;RING SHOULD BE CLEAR
1851 007022 000414 BR AKBE
1852 007024 052777 000001 172052 AKBD: BIS #BIT0,@TXCSR ;SET
1853 007032 042777 000001 172044 BIC #BIT0,@TXCSR ;RING
1854 007040 000005 RESET
1855 007042 032777 020000 172030 BIT #BIT13,@RXCSR ;TEST RING
1856 007050 001401 BEQ AKBE ;BRANCH IF CLEAR
1857 007052 104003 ERROR ;RING SHOULD BE CLEAR AFTER RESET
1858 ;BUT WAS SET
1859 007054 104011 AKBE: SRESET ;ISSUE RESET
1860 007056 104012 SCOPE ;SCOPE
1861 :*****
1862 007060 000041 AT41: 41 ;TEST NUMBER 41
1863 007062 007166 AT42 ;ADDRESS OF NEXT TEST
1864 007064 000144 100. ;TEST ITERATION COUNT
1865 007066 007070 AOBA ;SCOPE ENTRY POINT
1866 :*****
1867 :TEST THAT ERROR (BIT 15 RXCSR) SETS WHEN RING SETS.
1868
1869 007070 042777 000001 172006 AOBA: BIC #BIT0,@TXCSR ;SET REQUEST TO SEND
1870 007076 032777 100000 171774 BIT #BIT15,@RXCSR ;TEST ERROR BIT
1871 007104 001402 BEQ AOBB
1872 007106 104003 ERROR
1873 007110 000424 BR AOBD
1874 007112 052777 000001 171764 AOBB: BIS #BIT0,@TXCSR ;SET REQUEST TO SEND
1875 007120 042777 000001 171756 BIC #BIT0,@TXCSR ;CLEAR REQUEST TO SEND
1876 007126 032777 100000 171744 BIT #BIT15,@RXCSR ;TEST ERROR BIT
1877 007134 001002 BNE AOBC
1878 007136 104003 ERROR
1879 007140 000410 BR AOBD
1880 007142 042777 000001 171734 AOBC: BIC #BIT0,@TXCSR ;CLEAR REQUEST TO SEND
1881 007150 032777 100000 171722 BIT #BIT15,@RXCSR ;TEST ERROR BIT
1882 007156 001401 BEQ AOBD
1883 007160 104003 ERROR
1884 007162 104011 AOBD: SRESET ;ISSUE RESET
1885 007164 104012 SCOPE ;SCOPE
1886
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1887
1888
1889 007166 000042
1890 007170 007272
1891 007172 000144
1892 007174 007176
1893
1894
1895
1896
1897 007176 000400 171674 ALBA: BIC #BIT8,@RXCSR ;CLEAR SUPERVISOR XMIT DATA
1898 007204 032777 100000 171672 BIT #BIT15,@TXCSR ;TEST SUPERVISORY RECEIVE DATA.
1899 007212 001402 BEQ ALBB
1900 007214 104003 ERROR ;SHOULD HAVE BEEN CLEAR
1901 007216 000423 BR ALBD
1902 007220 052777 000400 171652 ALBB: BIS #BIT8,@RXCSR ;SET SUPERVISORY XMIT DATA
1903 007226 104016 DELAY ;DEL 1 MSEC. ;:++C
1904 007230 000001 1
1905 007232 032777 100000 171644 BIT #BIT15,@TXCSR ;TEST SUPERVISORY RECEIVE DATA
1906 007240 001002 BNE ALBC
1907 007242 104003 ERROR ;SHOULD HAVE BEEN SET
1908 007244 000410 BR ALBD
1909 007246 042777 000400 171624 ALBC: BIC #BIT8,@RXCSR ;CLEAR SUPERVISORY XMIT DATA
1910 007254 032777 100000 171622 BIT #BIT15,@TXCSR ;TEST SUPERVISORY RECEIVE DATA
1911 007262 001401 BEQ ALBD
1912 007264 104003 ERROR ;SHOULD HAVE BEEN CLEAR
1913 007266 104011 ALBD: SRESET ;ISSUE RESET
1914 007270 104012 SCOPE ;SCOPE
1915
1916 007272 000043
1917 007274 007376
1918 007276 000144
1919 007300 007302
1920
1921
1922 007302 012767 000340 170466 ABAA: MOV #PRTY7,PSW ;SET PRIORITY 7.
1923 007310 012777 177777 171566 MOV #-1,@TXCSR ;SET ALL POSSIBLE BITS IN TXCSR
1924 007316 104011 SRESET ;ISSUE RESET TO CLEAR BITS
1925 007320 022777 000200 171556 CMP #BIT7,@TXCSR ;SEE IF ONLY BIT 7 IS SET.
1926 007326 001422 BEQ ABAB ;BRANCH IF ONLY BIT 7 IS SET
1927 007330 017767 171550 171720 MOV @TXCSR,TXCSRT ;SAVE CONTENTS OF TXCSR
1928 007336 012767 000200 171720 MOV #BIT7,TEMP ;MOVE EXPECTED TXCSR TO TEMP.
1929 007344 004567 173730 JSR %5,OACNV ;GO TO OCTAL TO ASCII CONVERT.
1930 007350 001264 TEMP ;SOURCE ADDR.
1931 007352 015461 ATXSB ;DESTINATION ADDR.
1932 007354 000006 6 ;#OF DIGITS TO CONVERT.
1933 007356 004567 173716 JSR %5,OACNV ;GO TO OCTAL TO ASCII CONVERT.
1934 007362 001256 TXCSRT ;SOURCE ADDR.
1935 007364 015476 ATXWAS ;DESTINATION ADDR.
1936 007366 000006 6 ;#OF DIGITS TO CONVERT.
1937 007370 104015 ERROR1 ;RESET FAILED TO CLEAR ALL BITS EXCEPT
1938 007372 015446 ATXCSR ;BIT 7 - SEE PRINTOUT
1939 007374 104012 ABAB: SCOPE ;SCOPE
1940
1941
1942 007376 000044
AT44: 44 ;TEST NUMBER 44
```



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1943 007400 007552 AT45 ;ADDRESS OF NEXT TEST *
1944 007402 000144 100. ;TEST ITERATION COUNT *
1945 007404 007406 ACAA ;SCOPE ENTRY POINT *
1946 *****
1947 ;TEST THAT RESET CLEARS ALL RXCSR BITS EXCEPT BIT 0 (DATA TERMINAL READY)
1948 ;RING, AND THE BREAK BIT.
1949 007406 012767 000340 170362 ACAA: MOV #PRTY7,PSW ;SET PRIORITY 7
1950 007414 042777 000001 171456 BIC #BIT0,@RXCSR ;CLEAR DATA TERM.READY
1951 007422 012777 177775 171450 MOV #177775,@RXCSR ;SET ALL POSSIBLE BITS IN RXCSR
1952 007430 052777 000030 171446 BIS #30,@TXCSR ;SET MAINT BIT
1953 007436 005077 171444 CLR @TXBUF ;TRANSMIT A CHAR
1954 007442 105777 171436 TSTB @TXCSR ;WAIT FOR
1955 007446 100375 BPL .-4 ;TRANSMITTER TO FINISH
1956 007450 012777 000001 171430 MOV #1,@TXBUF ;TRANSMIT ANOTHER CHAR.
1957 007456 105777 171422 TSTB @TXCSR ;WAIT FOR
1958 007462 100375 BPL .-4 ;TRANSMITTER TO FINISH
1959 007464 104011 SRESET ;ISSUE RESET TO CLEAR BITS.
1960 007466 017767 171406 171564 MOV @RXCSR,RXCSRT ;MOVE RXCSR CONTENTS TO RXCSRT
1961 007474 022767 000005 171556 CMP #5,RXCSRT ;SEE IF ONLY BIT 0 IS SET
1962 007502 001417 BEQ ACAB ;BRANCH IF ONLY BIT 0 IS SET.
1963 007504 012767 000005 171552 MOV #5,TEMP
1964 007512 004567 173562 JSR %5,OACNV ;GO TO OCTAL TO ASCII CONVERT.
1965 007516 001264 TEMP ;SOURCE ADDR.
1966 007520 015520 ARXSB ;DESTINATION ADDR.
1967 007522 000006 6 ;#OF DIGITS TO CONVERT.
1968 007524 004567 173550 JSR %5,OACNV ;GO TO OCTAL TO ASCII CONVERT.
1969 007530 001260 RXCSRT ;SOURCE ADDR.
1970 007532 015535 ARXWAS ;DESTINATION ADDR.
1971 007534 000006 6 ;#OF DIGITS TO CONVERT.
1972 007536 104015 ERROR1 ;RESET FAILED TO CLEAR ALL BITS EXCEPT
1973 007540 015505 ARXCSR ;BIT 0. SEE ERROR PRINTOUT.
1974 007542 042777 000001 171330 ACAB: BIC #BIT0,@RXCSR ;CLEAR DATA TERM. READY
1975 007550 104012 SCOPE ;SCOPE
1976 *****
1977 007552 000045 AT45: 45 ;TEST NUMBER 45 *
1978 007554 007602 AT46 ;ADDRESS OF NEXT TEST *
1979 007556 000144 100. ;TEST ITERATION COUNT *
1980 007560 007562 ADAA ;SCOPE ENTRY POINT *
1981 *****
1982 ;TEST THAT LOADING TXBUF (TRANSMITTER BUFFER) CLEARS TXCSR BIT 7 (READY)
1983 007562 005077 171320 ADAA: CLR @TXBUF ;LOAD TXBUF
1984 007566 105777 171312 TSTB @TXCSR ;TEST TXCSR BIT 7 (READY BIT)
1985 007572 100001 BPL ADAB ;BRANCH IF BIT NOT SET.
1986 007574 104003 ERROR ;ERROR. LOADING TXBUF FAILED TO CLEAR READY.
1987 007576 104011 ADAB: SRESET ;ISSUE RESET TO SET READY.
1988 007600 104012 SCOPE ;SCOPE.
1989 *****
1990 ;*****
1991 007602 000046 AT46: 46 ;TEST NUMBER 46 *
1992 007604 007634 AT47 ;ADDRESS OF NEXT TEST *
1993 007606 000012 10. ;TEST ITERATION COUNT *
1994 007610 007612 AEAA ;SCOPE ENTRY POINT *
1995 *****
1996 ;TEST THAT READY BIT (TXCSR BIT 7) BECOMES SET NO LATER THAN 1000 MSECS AFTER
1997 ;LOADING TXBUF WITH TRANSMIT SPEED SET TO 00 (TXCSR BITS 3 AND 4)
1998 007612 005077 171270 AEAA: CLR @TXBUF ;LOAD TXBUF
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1999 007616 104016          DELAY          ;DELAY 1000 MSECS APPROX.
2000 007620 001750          1000.
2001 007622 105777 171256  TSTB      @TXCSR  ;SEE IF READY BIT IS SET
2002 007626 100401          BMI      AEAB    ;BRANCH IF READY IS SET
2003 007630 104003          ERROR     ;READY NOT SET 200 MSECS AFTER BUFFER
2004                                ;LOAD. TX SPEED = 00.
2005 007632 104012          AEAB:  SCOPE   ;SCOPE
2006
2007                                ;*****
2008 007634 000047          AT47:  47      ;TEST NUMBER 47 *
2009 007636 007674          AT50      ;ADDRESS OF NEXT TEST *
2010 007640 000012          10.      ;TEST ITERATION COUNT *
2011 007642 007644          AFAA     ;SCOPE ENTRY POINT *
2012                                ;*****
2013                                ;TEST THAT READY BIT (TXCSR BIT 7) BECOMES SET NO LATER THAN 500 MSECS AFTER
2014                                ;LOADING TXBUF, WITH TRANSMIT SPEED SET TO 01 (TXCSR BITS 3 AND 4).
2015 007644 052777 000010 171232 AFAA:  BIS      #10,@TXCSR ;SET TX SPEED TO 01.
2016 007652 005077 171230          CLR      @TXBUF  ;LOAD TXBUF
2017 007656 104016          DELAY     ;DELAY 500 MSECS
2018 007660 000764          500.
2019 007662 105777 171216  TSTB      @TXCSR  ;SEE IF READY BIT IS SET
2020 007666 100401          BMI      AFAB    ;BRANCH IF READY IS SET
2021 007670 104003          ERROR     ;READY NOT SET 200 MSECS AFTER BUFFER
2022                                ;LOAD. TX SPEED = 01.
2023 007672 104012          AFAB:  SCOPE   ;SCOPE.
2024                                ;*****
2025 007674 000050          AT50:  50      ;TEST NUMBER 50 *
2026 007676 007734          AT51      ;ADDRESS OF NEXT TEST *
2027 007700 000012          10.      ;TEST ITERATION COUNT *
2028 007702 007704          AGAA     ;SCOPE ENTRY POINT *
2029                                ;*****
2030                                ;TEST THAT READY BIT (TXCSR BIT 7) BECOMES SET NO LATER THAN 400 MSECS AFTER
2031                                ;LOADING TXBUF, WITH TRANSMIT SPEED SET TO 10 (TXCSR BITS 3 AND 4).
2032 007704 052777 000020 171172 AGAA:  BIS      #20,@TXCSR ;SET TX SPEED TO 10.
2033 007712 005077 171170          CLR      @TXBUF  ;LOAD TXBUF
2034 007716 104016          DELAY     ;DELAY 400 MSECS
2035 007720 000620          400.
2036 007722 105777 171156  TSTB      @TXCSR  ;SEE IF READY BIT IS SET
2037 007726 100401          BMI      AGAB    ;BRANCH IF READY BIT IS SET
2038 007730 104003          ERROR     ;READY NOT SET 200 MSECS AFTER BUFFER
2039                                ;LOAD. TX SPEED = 10.
2040 007732 104012          AGAB:  SCOPE   ;SCOPE
2041
2042                                ;*****
2043 007734 000051          AT51:  51      ;TEST NUMBER 51 *
2044 007736 007774          AT52      ;ADDRESS OF NEXT TEST *
2045 007740 000012          10.      ;TEST ITERATION COUNT *
2046 007742 007744          AHAA     ;SCOPE ENTRY POINT *
2047                                ;*****
2048                                ;TEST THAT READY BIT (TXCSR BIT 7) BECOMES SET NO LATER THAN 250 MSECS AFTER
2049                                ;LOADING TXBUF, WITH TRANSMIT SPEED SET TO 11 (TXCSR BITS 3 AND 4).
2050 007744 052777 000030 171132 AHAA:  BIS      #30,@TXCSR ;SET TX SPEED TO 30.
2051 007752 005077 171130          CLR      @TXBUF  ;LOAD TXBUF
2052 007756 104016          DELAY     ;DELAY 250 MSECS.
2053 007760 000372          250.
2054 007762 105777 171116  TSTB      @TXCSR  ;SEE IF READY BIT IS SET.
```



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2055 007766 100401          BMI      AHAB          ;BRANCH IF READY BIT IS SET.
2056 007770 104003          ERROR
2057                          AHAB:  SCOPE          ;READY NOT SET 200 MSECS AFTER
2058 007772 104012          ;BUFFER LOAD. TX SPEED = 11.
2059                          ;SCOPE
2060
2061 007774 000052          ;*****
2062 007776 010212          AT52:  52              ;TEST NUMBER 52 *
2063 010000 000144          ;*****
2064 010002 010004          AT53:  AT53            ;ADDRESS OF NEXT TEST *
2065                          100.          ;TEST ITERATION COUNT *
2066                          AIAA          ;SCOPE ENTRY POINT *
2067                          ;*****
2068 010004 005067 171236          ;TEST THAT TRANSMIT SPEEDS ARE ARRANGED IN ASCENDING ORDER BY CHECKING THAT TIME
2069 010010 005067 171234          ;TO READY BIT (TXCSR BIT 7) DECREASES AS A HIGHER SPEED IS SELECTED.
2070 010014 005067 171232          AIAA:  CLR      CTRA          ;CLEAR CTRA THROUGH CTRD
2071 010020 005067 171230          ;*****
2072 010024 042777 000030 171052          CLR      CTRB          ;(USED TO COUNT ELAPSED TIME.)
2073 010032 004767 000110          CLR      CTRC
2074 010036 066767 000146 171202          CLR      CTRD
2075 010044 052777 000010 171032          BIC     #30,@TXCSR      ;SELECT TX SPEED 0
2076 010052 004767 000070          JSR     %7,AIAS         ;OUTPUT CHAR AND TIME.
2077 010056 066767 000126 171164          ADD     AIAST,CTRA      ;ADD ELAPSED TIME TO CTRA.
2078 010064 042777 000030 171012          BIS     #10,@TXCSR      ;SELECT TX SPEED 1
2079 010072 052777 000020 171004          JSR     %7,AIAS         ;OUTPUT CHAR AND TIME.
2080 010100 004767 000042          ADD     AIAST,CTRB      ;ADD ELAPSED TIME TO CTRB.
2081 010104 066767 000100 171140          BIC     #30,@TXCSR      ;SELECT TX SPEED 2
2082 010112 052777 000030 170764          BIS     #20,@TXCSR
2083 010120 004767 000022          JSR     %7,AIAS         ;OUTPUT CHAR AND TIME.
2084 010124 066767 000060 171122          ADD     AIAST,CTRD      ;ADD ELAPSED TIME TO CTRD.
2085 010132 004767 004176          JSR     %7,CMPT         ;CHECK THAT CTRA THROUGH CTRD CONTAIN
2086 010136 000402          BR      AIAF            ;DESCENDING VALUES
2087 010140 104015          ERROR1                  ;TRANSMIT SPEEDS NOT ARRANGED IN
2088 010142 015544          ETXTIM                  ;ASCENDING ORDER.
2089 010144 104012          AIAF:  SCOPE          ;SCOPE
2090 010146 005067 000036          AIAS:  CLR      AIAST      ;CLEAR ELAPSED TIME COUNTER.
2091 010152 105777 170726          TSTB   @TXCSR          ;WAIT FOR TX READY.
2092 010156 100375          BPL    -.4
2093 010160 104016          DELAY  20.             ;WAIT 20 MSECS.
2094 010162 000024          ;*****
2095 010164 005077 170716          CLR     @TXBUF         ;LOAD TXBUF.
2096 010170 104016          AIASA: DELAY 1.         ;DELAY 1 MSEC.
2097 010172 000001          1
2098 010174 005267 000010          INC     AIAST          ;INCREMENT ELAPSED TIME COUNTER.
2099 010200 105777 170700          TSTB   @TXCSR          ;READY SET?
2100 010204 100371          BPL    AIASA          ;BRANCH IF READY NOT SET.
2101 010206 000207          RTS     %7             ;EXIT.
2102 010210 000000          AIAST: OPEN
2103                          ;*****
2104 010212 000053          AT53:  53              ;TEST NUMBER 53 *
2105 010214 010376          ;*****
2106 010216 000144          AT54:  AT54            ;ADDRESS OF NEXT TEST *
2107 010220 010222          100.          ;TEST ITERATION COUNT *
2108                          AJAA          ;SCOPE ENTRY POINT *
2109                          ;*****
2110                          ;TEST FOR CORRECT OPERATION OF STOP CODE BIT (TXCSR BIT 8) BY CHECKING THAT TIME.
                          ;REQUIRED TO COMPLETE TRANSMISSION OF 2 CONSECUTIVE CHARACTERS WITH STOP BIT
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2111 ;SET TO 0 IS LONGER THAN TIME REQUIRED WITH STOP CODE BIT SET TO A 1.
2112 010222 005067 171020 AJAA: CLR CTRA ;CLEAR CTRA AND CTRB
2113 010226 005067 171016 CLR CTRB ;(ELAPSED TIME COUNTERS).
2114 010232 042777 000400 170644 BIC #BIT8,@TXCSR ;SET STOP CODE TO 0 (2 STOP CODES)
2115 010240 004767 000044 JSR %7,AJAS ;OUTPUT CHAR AND TIME
2116 010244 066767 000124 170774 ADD AJAST,CTRA ;ADD ELAPSED TIME TO CTRA
2117 010252 052777 000400 170624 BIS #BIT8,@TXCSR ;SET STOP CODE TO 1 (1 STOP CODE)
2118 010260 004767 000024 JSR %7,AJAS ;OUTPUT CHARACTER AND TIME.
2119 010264 066767 000104 170756 ADD AJAST,CTRB ;ADD ELAPSED TIME TO CTRB
2120 010272 026767 170750 170750 CMP CTRA,CTRB ;SEE IF CTRA IS GREATER THAN CTRB
2121 010300 101002 BHI AJAB ;BRANCH IF CTRA IS GREATER.
2122 010302 104015 ERROR1 ;ERROR. ELAPSED TIME FOR 2 STOP CODE
2123 010304 015606 ESTPCD ;OPERATION NOT GREATER THAN FOR 1 STOP
2124 ;CODE.
2125 010306 104012 AJAB: SCOPE ;SCOPE
2126 010310 005067 000060 AJAS: CLR AJAST ;CLEAR ELAPSED TIME COUNTER AJAST
2127 010314 105777 170564 TSTB @TXCSR ;WAIT FOR TX READY.
2128 010320 100375 BPL -4
2129 010322 104016 DELAY ;WAIT 20 MSECS.
2130 010324 000024 20.
2131 010326 005077 170554 CLR @TXBUF ;LOAD TXBUF
2132 010332 104016 AJASA: DELAY ;DELAY 1 MSEC
2133 010334 000001 1
2134 010336 005267 000032 INC AJAST ;INCREMENT ELAPSED TIME COUNTER
2135 010342 105777 170536 TSTB @TXCSR ;READY SET?
2136 010346 100371 BPL AJASA ;BRANCH IF READY NOT SET.
2137 010350 005077 170532 CLR @TXBUF ;LOAD TXBUF.
2138 010354 104016 AJASB: DELAY ;DELAY 1 MSEC.
2139 010356 000001 1
2140 010360 005267 000010 INC AJAST ;INCR ELAPSED TIME COUNTER.
2141 010364 105777 170514 TSTB @TXCSR ;READY SET?
2142 010370 100371 BPL AJASB ;BRANCH IF READY NOT SET.
2143 010372 000207 RTS %7 ;EXIT
2144 010374 000000 AJAST: OPEN ;ELAPSED TIME COUNTER.
2145
2146
2147
2148 010376 000054 AT54: 54 ;TEST NUMBER 54 *
2149 010400 010622 AT55 ;ADDRESS OF NEXT TEST *
2150 010402 000144 100. ;TEST ITERATION COUNT *
2151 010404 010406 AKA4 ;SCOPE ENTRY POINT *
2152
2153 ;*****
2154 ;TEST FOR CORRECT OPERATION OF CHARACTER LENGTH SELECTION (RXCSR BITS 9 AND 10)
2155 ;BY CHECKING THAT TIME REQUIRED FOR OUTPUTTING A CHARACTER IS LONGEST FOR
2156 ;8 BIT CODE THAN FOR 7 BIT CODE ETC.
2156 010406 005067 170634 AKA4: CLR CTRA ;CLEAR CTRA THROUGH CTRD.
2157 010412 005067 170632 CLR CTRB ;(ELAPSED TIME COUNTERS).
2158 010416 005067 170630 CLR CTRC
2159 010422 005067 170626 CLR CTRD
2160 010426 042777 003000 170444 BIC #3000,@RXCSR ;SET CHAR LENGTH TO 00 (8 BIT CODE).
2161 010434 004767 000116 JSR %7,AKAS ;OUTPUT CHARACTER AND TIME.
2162 010440 066767 000154 170600 ADD AKAST,CTRA ;ADD ELAPSED TIME TO CTRA
2163 010446 042777 003000 170424 BIC #3000,@RXCSR ;SET CHAR LENGTH TO 01 (7 BIT CODE).
2164 010454 052777 001000 170416 BIS #1000,@RXCSR
2165 010462 004767 000070 JSR %7,AKAS ;OUTPUT CHARACTER AND TIME.
2166 010466 066767 000126 170554 ADD AKAST,CTRB ;ADD ELAPSED TIME TO CTRB.

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2167 010474 042777 003000 170376 BIC #3000,@RXCSR ;SET CHAR LENGTH TO 10 (6 BIT CODE)
2168 010502 052777 002000 170370 BIS #2000,@RXCSR
2169 010510 004767 000042 JSR %7,AKAS ;OUTPUT CHARACTER AND TIME.
2170 010514 066767 000100 170530 ADD AKAST,CTRC ;ADD ELAPSED TIME TO CTRC
2171 010522 052777 003000 170350 BIS #3000,@RXCSR ;SET CHAR LENGTH TO 11 (5 BIT CODE)
2172 010530 004767 000022 JSR %7,AKAS ;OUTPUT CHARACTER AND TIME
2173 010534 066767 000060 170512 ADD AKAST,CTRD ;ADD ELAPSED TIME TO CTRD
2174 010542 004767 003566 JSR %7,CMPT ;CHECK THAT CTRA THROUGH CTRD
2175 010546 000402 BR AKAB ;DESCENDING VALUES.
2176 010550 104015 ERROR1 ;TX CHARACTER LENGTH NOT ARRANGED
2177 010552 015657 ETCLGT ;IN DESCENDING ORDER.
2178 010554 104012 AKAB: SCOPE ;SCOPE
2179 010556 005067 000036 AKAS: CLR AKAST ;CLEAR ELAPSED TIME COUNTER AKAST
2180 010562 105777 170316 TSTB @TXCSR ;WAIT FOR TX READY.
2181 010566 100375 BPL -4
2182 010570 104016 DELAY ;WAIT 20 MSECS.
2183 010572 000024 20.
2184 010574 005077 170306 AKASA: CLR @TXBUF ;LOAD TXBUF
2185 010600 104016 AKASA: DELAY ;DELAY 1 MSEC
2186 010602 000001 1
2187 010604 005267 000010 INC AKAST ;INCREMENT ELAPSED TIME COUNTER
2188 010610 105777 170270 TSTB @TXCSR ;READY SET?
2189 010614 100371 BPL AKASA ;BRANCH IF READY NOT SET
2190 010616 000207 RTS %7 ;EXIT
2191 010620 000000 AKAST: OPEN ;ELAPSED TIME COUNTER
2192
2193
2194
2195 010622 000055 AT55: 55 ;TEST NUMBER 55 *
2196 010624 010676 AT56 ;ADDRESS OF NEXT TEST *
2197 010626 000144 100. ;TEST ITERATION COUNT *
2198 010630 010632 ALAA ;SCOPE ENTRY POINT *
2199
2200 ;*****
2201 ;TEST THAT OUTPUTTING A CHARACTER WITH THE MAINTENANCE BIT SET (TXCSR BIT 2)
2202 ;RESULTS IN DONE BIT SETTING (RXCSR BIT 7) NO LATER THAN 200 MSECS, AND
2203 ;THAT RESET INSTRUCTION CLEARS THE DONE BIT
2204 010632 052777 000004 170244 ALAA: BIS #BIT2,@TXCSR ;SET MAINTENANCE (TXCSR BIT 2)
2205 010640 005077 170242 CLR @TXBUF ;LOAD TXBUF
2206 010644 104016 DELAY ;WAIT 200 MSECS.
2207 010646 000310 200.
2208 010650 105777 170224 TSTB @RXCSR ;SEE IF DONE BIT IS SET
2209 010654 100402 BMI ALAB ;BRANCH IF DONE BIT IS SET
2210 010656 104003 ERROR ;DONE BIT FAILED TO SET
2211 010660 000405 BR ALAC
2212 010662 104011 ALAB: SRESET ;ISSUE RESET TO CLEAR DONE BIT
2213 010664 105777 170210 TSTB @RXCSR ;SEE IF DONE BIT IS CLEARED
2214 010670 100001 BPL ALAC ;BRANCH IF DONE BIT IS CLEARED
2215 010672 104003 ERROR ;RESET FAILED TO CLEAR DONE BIT
2216 010674 104012 ALAC: SCOPE ;SCOPE
2217 010676 000056 AT56: 56 ;TEST NUMBER 56 *
2218 010700 010744 AT57 ;ADDRESS OF NEXT TEST *
2219 010702 000144 100. ;TEST ITERATION COUNT *
2220 010704 010706 AMAA ;SCOPE ENTRY POINT *
2221
2222 ;*****
;TEST THAT DONE BIT (RXCSR BIT 7) IS CLEARED BY READING RXBUF.
```



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2223 ;DONE SET BY OUTPUTTING CHARACTER WITH MAINTENANCE BIT SET (TXCSR BIT 2)
2224 010706 052777 000004 170170 AMAA: BIS #BIT2,@TXCSR ;SET MAINTENANCE BIT (TXCSR BIT 2)
2225 010714 005077 170166 CLR @TXBUF ;LOAD TXBUF
2226 010720 105777 170154 AMAB: TSTB @RXCSR ;WAIT FOR DONE BIT TO SET.
2227 010724 100375 BPL AMAB
2228 010726 005777 170150 TST @RXBUF ;READ RXBUF TO CLEAR DONE BIT
2229 010732 105777 170142 TSTB @RXCSR ;SEE IF DONE BIT IS CLEAR
2230 010736 100001 BPL AMAC ;BRANCH IF DONE BIT IS CLEAR
2231 010740 104003 ERROR ;READING RXBUF FAILED TO CLEAR DONE BIT
2232 010742 104012 AMAC: SCOPE ;SCOPE
2233
2234
2235 ;*****
2236 010744 000057 AT57: 57 ;TEST NUMBER 57 *
2237 010746 011032 AT60 ;ADDRESS OF NEXT TEST *
2238 010750 000012 10. ;TEST ITERATION COUNT *
2239 010752 010754 ANAA ;SCOPE ENTRY POINT *
2240 ;*****
2241 ;TEST THAT DONE BIT (RXCSR BIT 7) SETS NO LATER THAN 500 MSECS AFTER OUTPUTTING
2242 ;CHARACTER WITH MAINTENANCE BIT SET AND RECEIVE SPEED SET TO 01 (TRANSMIT
2243 ;SPEED ALSO SET TO 01
2244 010754 042777 000030 170122 ANAA: BIC #30,@TXCSR ;SET MAINTENANCE BIT AND SET
2245 010762 052777 000014 170114 BIS #14,@TXCSR ;TX SPEED=01
2246 010770 042777 000030 170102 BIC #30,@RXCSR ;SET RX SPEED =01
2247 010776 052777 000010 170074 BIS #10,@RXCSR
2248 011004 005077 170076 CLR @TXBUF ;LOAD TXBUF
2249 011010 104016 DELAY 500. ;DELAY 500 MSECS.
2250 011012 000764 500.
2251 011014 105777 170060 TSTB @RXCSR ;SEE IF DONE BIT IS SET.
2252 011020 100401 BMI ANAB ;BRANCH IF DONE IS SET.
2253 011022 104003 ERROR ;DONE FAILED TO SET WITH RX SPEED=01.
2254 011024 005777 170052 ANAB: TST @RXBUF ;CLEAR DONE BIT IF SET.
2255 011030 104012 SCOPE ;SCOPE
2256
2257 ;*****
2258 011032 000060 AT60: 60 ;TEST NUMBER 60 *
2259 011034 011120 AT61 ;ADDRESS OF NEXT TEST *
2260 011036 000012 10. ;TEST ITERATION COUNT *
2261 011040 011042 AOAA ;SCOPE ENTRY POINT *
2262 ;*****
2263 ;TEST THAT DONE BIT (RXCSR BIT 7) SETS NO LATER THAN 400 MSECS AFTER OUTPUTTING
2264 ;CHARACTER WITH MAINTENANCE BIT SET AND RECEIVE SPEED SET TO 10 (TRANSMIT
2265 ;SPEED ALSO SET TO 10).
2266 011042 042777 000030 170034 AOAA: BIC #30,@TXCSR ;SET MAINTENANCE BIT AND SET
2267 011050 052777 000024 170026 BIS #24,@TXCSR ;TX SPEED=10.
2268 011056 042777 000030 170014 BIC #30,@RXCSR ;SET RX SPEED=10.
2269 011064 052777 000020 170006 BIS #20,@RXCSR
2270 011072 005077 170010 CLR @TXBUF ;LOAD TXBUF
2271 011076 104016 DELAY 400. ;DELAY 400 MSECS
2272 011100 000620 400.
2273 011102 105777 167772 TSTB @RXCSR ;SEE IF DONE BIT IS SET.
2274 011106 100401 BMI AOAB ;BRANCH IF DONE BIT IS SET.
2275 011110 104003 ERROR ;DONE FAILED TO SET WITH RX SPEED=10.
2276 011112 005777 167764 AOAB: TST @RXBUF ;CLEAR DONE BIT IF SET
2277 011116 104012 SCOPE ;SCOPE
2278 ;*****
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2279 011120 000061 AT61: 61 ;TEST NUMBER 61 *
2280 011122 011172 AT62 ;ADDRESS OF NEXT TEST *
2281 011124 000012 10. ;TEST ITERATION COUNT *
2282 011126 011130 APAA ;SCOPE ENTRY POINT *
2283 *****
2284 ;TEST THAT DONE BIT (RXCSR BIT 7) SETS NO LATER THAN 250 MSECS AFTER OUTPUTTING
2285 ;CHARACTER WITH MAINTENANCE BIT SET AND RECEIVE SPEED SET11 (TRANSMIT SPEED
2286 ;ALSO SET TO 11).
2287 011130 052777 000034 167746 APAA: BIS #34,@TXCSR ;SET MAINT BIT AND TX SPEED=11
2288 011136 052777 000030 167734 BIS #30,@RXCSR ;SET RX SPEED=11
2289 011144 005077 167736 CLR @TXBUF ;LOAD TXBUF
2290 011150 104016 DELAY ;DELAY 250 MSECS.
2291 011152 000372 250.
2292 011154 105777 167720 TSTB @RXCSR ;SEE IF DONE BIT IS SET.
2293 011160 100401 BMI APAB ;BRANCH IF DONE BIT IS SET.
2294 011162 104003 ERROR ;DONE FAILED TO SET WITH RX SPEED=11
2295 011164 005777 167712 APAB: TST @RXBUF ;CLEAR DONE BIT IF SET.
2296 011170 104012 SCOPE ;SCOPE
2297
2298
2299 *****
2300 011172 000062 AT62: 62 ;TEST NUMBER 62 *
2301 011174 011474 AT63 ;ADDRESS OF NEXT TEST *
2302 011176 000144 100. ;TEST ITERATION COUNT *
2303 011200 011202 AQAA ;SCOPE ENTRY POINT *
2304 *****
2305 ;TEST THAT RECEIVE SPEEDS ARE ARRANGED IN ASCENDING ORDER BY CHECKING THAT TIME
2306 ;ELAPSED TO DONE BIT SETTING (RXCSR BIT 7) DECREASES AS A HIGHER SPEED
2307 ;IS SELECTED. THE TRANSMIT SPEED SELECTED WILL CORRESPOND TO THE SELECTED RECEIVE SPEED
2308 011202 005067 170040 AQAA: CLR CTRA ;CLEAR CTRA THROUGH CTRD
2309 011206 005067 170036 CLR CTRB ;(ELAPSED TIME COUNTERS)
2310 011212 005067 170034 CLR CTRC
2311 011216 005067 170032 CLR CTRD
2312 011222 042777 000030 167654 BIC #30,@TXCSR ;SELECT TX SPEED 00
2313 011230 052777 000004 167646 BIS #BIT2,@TXCSR ;SET MAINTENANCE BIT
2314 011236 042777 000030 167634 BIC #30,@RXCSR ;SELECT RX SPEED 00
2315 011244 004767 000154 JSR %7,AQAS ;OUTPUT CHARACTER AND TIME DONE BIT
2316 011250 066767 000216 167770 ADD AQAST,CTRA ;ADD ELAPSED TIME TO CTRA
2317 011256 042777 000030 167620 BIC #30,@TXCSR ;SELECT TX SPEED 01
2318 011264 052777 000010 167612 BIS #10,@TXCSR
2319 011272 042777 000030 167600 BIC #30,@RXCSR ;SELECT RX SPEED 01.
2320 011300 052777 000010 167572 BIS #10,@RXCSR
2321 011306 004767 000112 JSR %7,AQAS ;OUTPUT CHARACTER AND TIME DONE BIT
2322 011312 066767 000154 167730 ADD AQAST,CTRB ;ADD ELAPSED TIME TO CTRB
2323 011320 042777 000030 167556 BIC #30,@TXCSR ;SELECT TX SPEED 10
2324 011326 052777 000020 167550 BIS #20,@TXCSR
2325 011334 042777 000030 167536 BIC #30,@RXCSR ;SELECT RX SPEED 10
2326 011342 052777 000020 167530 BIS #20,@RXCSR
2327 011350 004767 000050 JSR %7,AQAS ;OUTPUT CHARACTER AND TIME DONE BIT.
2328 011354 066767 000112 167670 ADD AQAST,CTRC ;ADD ELAPSED TIME TO CTRC.
2329 011362 052777 000030 167514 BIS #30,@TXCSR ;SELECT TX SPEED 11
2330 011370 052777 000030 167502 BIS #30,@RXCSR ;SELECT RX SPEED 11
2331 011376 004767 000022 JSR %7,AQAS ;OUTPUT CHARACTER AND TIME DONE BIT
2332 011402 066767 000064 167644 ADD AQAST,CTRD ;ADD ELAPSED TIME TO CTRD.
2333 011410 004767 002720 JSR %7,CMPT ;CHECK THAT CTRA THROUGH CTRD CONTAIN
2334 011414 000402 BR AQAB ;DESCENDING VALUES.
```



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2335 011416 104015 ERROR1 ;RECEIVE SPEEDS NOT ARRANGED IN
2336 011420 015730 ERXTIM ;ASCENDING ORDER.
2337 011422 104012 AQAB: SCOPE ;SCOPE
2338 011424 005067 000042 AQAS: CLR AQAST ;CLEAR ELAPSED TIME COUNTER AQAST
2339 011430 105777 167450 TSTB @TXCSR ;WAIT FOR TX READY.
2340 011434 100375 BPL -4
2341 011436 104016 DELAY ;WAIT 20 MSECS.
2342 011440 000024 20.
2343 011442 005777 167434 TST @RXBUF ;CLEAR DONE BIT IF SET
2344 011446 005077 167434 CLR @TXBUF ;LOAD TXBUF
2345 011452 104016 AQASA: DELAY ;DELAY 1 MSEC
2346 011454 000001 1
2347 011456 005267 000010 INC AQAST ;INCREMENT ELAPSED TIME COUNTER
2348 011462 105777 167412 TSTB @RXCSR ;DONE SET?
2349 011466 100371 BPL AQASA ;BRANCH IF DONE NOT SET
2350 011470 000207 RTS %7 ;EXIT
2351 011472 000000 AQAST: OPEN ;ELAPSED TIME COUNTER
2352
2353
2354 ;*****
2355 011474 000063 AT63: 63 ;TEST NUMBER 63 *
2356 011476 011732 AT64 ;ADDRESS OF NEXT TEST *
2357 011500 000144 100. ;TEST ITERATION COUNT *
2358 011502 011504 ARAA ;SCOPE ENTRY POINT *
2359 ;*****
2360 ;TEST FOR CORRECT OPERATION OF CHARACTER LENGTH SELECTION DURING RECEIVE
2361 ;(RXCSR BITS 9 AND 10) BY CHECKING THAT TIME REQUIRED TO RECEIVE A CHARACTER
2362 ;IS LONGEST FOR 8 BIT CODE THAN FOR 7 BIT CODE ETC.
2363 011504 005067 167536 ARAA: CLR CTRA ;CLEAR CTRA THROUGH CTRD
2364 011510 005067 167534 CLR CTRB ;(ELAPSED TIME COUNTERS)
2365 011514 005067 167532 CLR CTRC
2366 011520 005067 167530 CLR CTRD
2367 011524 042777 003000 167346 BIC #3000,@RXCSR ;SET CHAR LENGTH TO 00 (8 BIT CODE)
2368 011532 004767 000116 JSR %7,ARAS ;OUTPUT CHAR AND TIME DONE BIT.
2369 011536 066767 000166 167502 ADD ARAST,CTRA ;ADD ELAPSED TIME TO CTRA
2370 011544 042777 003000 167326 BIC #3000,@RXCSR ;SET CHAR LENGTH TO 01 (7 BIT CODE)
2371 011552 052777 001000 167320 BIS #1000,@RXCSR
2372 011560 004767 000070 JSR %7,ARAS ;OUTPUT CHAR AND TIME DONE BIT
2373 011564 066767 000140 167456 ADD ARAST,CTRB ;ADD ELAPSED TIME TO CTRB
2374 011572 042777 003000 167300 BIC #3000,@RXCSR ;SET CHAR LENGTH TO 10 (6 BIT CODE)
2375 011600 052777 002000 167272 BIS #2000,@RXCSR
2376 011606 004767 000042 JSR %7,ARAS ;OUTPUT CHAR AND TIME DONE BIT
2377 011612 066767 000112 167432 ADD ARAST,CTRC ;ADD ELAPSED TIME TO CTRC
2378 011620 052777 003000 167252 BIS #3000,@RXCSR ;SET CHAR LENGTH TO 11 (5 BIT CODE)
2379 011626 004767 000022 JSR %7,ARAS ;OUTPUT CHAR AND TIME DONE BIT
2380 011632 066767 000072 167414 ADD ARAST,CTRD ;ADD ELAPSED TIME TO CTRD
2381 011640 004767 002470 JSR %7,CMPT ;CHECK THAT CTRA THROUGH CTRD
2382 011644 000402 BR ARAB ;CONTAIN DESCENDING VALUES
2383 011646 104015 ERROR1 ;RECEIVE CHARACTER LENGTHS NOT ARRANGED
2384 011650 015772 ERCLGT ;IN DESCENDING ORDER
2385 011652 104012 ARAB: SCOPE ;SCOPE
2386 011654 005067 000050 ARAS: CLR ARAST ;CLEAR ELAPSED TIME COUNTER ARAST
2387 011660 105777 167220 TSTB @TXCSR ;WAIT FOR TX READY.
2388 011664 100375 BPL -4
2389 011666 104016 DELAY ;WAIT 20 MSECS.
2390 011670 000024 20.
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2391 011672 005777 167204      TST  @RXBUF      ;CLEAR DONE BIT IF SET
2392 011676 052777 000004 167200  BIS  #BIT2,@TXCSR ;SET MAINTENANCE BIT
2393 011704 005077 167176      CLR  @TXBUF      ;LOAD TXBUF
2394
2395 011710 104016      ARASA: DELAY      ;DELAY 1 MSEC.
2396 011712 000001          1
2397 011714 005267 000010      INC  ARAST        ;INCREMENT ELAPSED TIME COUNTER
2398 011720 105777 167154      TSTB @RXCSR      ;SEE IF DONE BIT IS SET.
2399 011724 100371          BPL  ARASA        ;BRANCH IF NOT SET
2400 011726 000207          RTS  %7           ;EXIT
2401 011730 000000      ARAST: OPEN      ;ELAPSED TIME COUNTER
2402
2403
2404
2405 011732 000064      AT64: 64          ;TEST NUMBER 64 *
2406 011734 012046      AT65          ;ADDRESS OF NEXT TEST *
2407 011736 000144      100.         ;TEST ITERATION COUNT *
2408 011740 011742      ASAA          ;SCOPE ENTRY POINT *
2409
2410
2411 011742 004767 000060      ASAA: JSR  %7,ASAS ;TEST CORRECT OPERATION OF DATA OVERRUN BIT (RXCSR BIT 12)
2412 011746 004767 000054          JSR  %7,ASAS ;OUTPUT CHARACTER AND WAIT 200 MSECS
2413 011752 017767 167122 167300  MOV  @RXCSR,RXCSR ;OUTPUT CHARACTER AND WAIT 200 MSECS
2414 011760 032767 010000 167272  BIT  #BIT12,RXCSR ;SAVE RXCSR CONTENTS
2415 011766 001002          BNE  ASAB        ;SEE IF DATA OVERRUN BIT WAS SET
2416 011770 104003          ERROR
2417 011772 000412          BR   ASAD        ;BRANCH IF BIT WAS SET
2418 011774 005767 167260      ASAB: TST  RXCSR   ;SEE IF ERROR BIT WAS SET (RXCSR BIT 15)
2419 012000 100402          BMI  ASAC
2420 012002 104003          ERROR
2421
2422 012004 000405          BR   ASAD        ;ERROR BIT FAILED TO SET
2423 012006 032777 010000 167064  ASAC: BIT  #BIT12,@RXCSR ;WHEN DATA OVERRUN SET
2424
2425 012014 001401          BEQ  ASAD        ;SEE IF DATA OVERRUN WAS
2426 012016 104003          ERROR ;CLEARED WHEN RXCSR WAS READ
2427
2428 012020 005777 167056      ASAD: TST  @RXBUF   ;BRANCH IF CLEAR
2429 012024 104012          SCOPE ;READING RXCSR FAILED
2430 012026 052777 000004 167050  ASAS: BIS  #BIT2,@TXCSR ;TO CLEAR DATA OVERRUN
2431 012034 005077 167046      CLR  @TXBUF      ;CLEAR DONE BIT (RXCSR BIT 7)
2432 012040 104016          DELAY ;SCOPE
2433 012042 000310          200. ;SET MAINTENANCE BIT
2434 012044 000207          RTS  %7           ;LOAD TXBUF
2435
2436
2437 012046 000065      AT65: 65          ;DELAY 200 MSECS
2438 012050 012120      AT66          ;EXIT
2439 012052 000012      10.          ;TEST NUMBER 65 *
2440 012054 012066      ATAA          ;ADDRESS OF NEXT TEST *
2441
2442
2443
2444 012056 004767 170550      JSR  7,OVRLAY   ;TEST ITERATION COUNT *
2445 012062 104007          STTXV ;SCOPE ENTRY POINT *
2446 012064 012114          ATAC ;TEST THAT TRANSMITTER IS ABLE TO INTERRUPT. IF THE INTERRUPT IS SERVICED,
;IT WILL HAVE OCCURRED AT THE CORRECT VECTOR.
;GO TO OVER LAY ROUTINE
;SET TX INTERRUPT SERVICE
;TO ATAC
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2447 012066 042777 000100 167010 ATAA: BIC #BIT6,@TXCSR ;DISABLE TX INTERRUPT
2448 012074 005067 165676 CLR PSW ;SET PROCESSOR PRIORITY TO 0
2449 012100 052777 000104 166776 BIS #104,@TXCSR ;ENABLE TX INTERRUPT
2450 012106 000240 NOP
2451 012110 104003 ERROR ;READY DID NOT CAUSE AN INTERRUPT
2452 012112 104012 ATAB: SCOPE ;SCOPE
2453 012114 022626 ATAC: POPSP2 ;HERE IF INTERRUPT IS SERVICED. POP
2454 012116 000775 BR ATAB ;THE STOCK TWICE
2455
2456
2457
2458
2459 012120 000066 AT66: 66 ;TEST NUMBER 66 *
2460 012122 012176 AT67 ;ADDRESS OF NEXT TEST *
2461 012124 001750 1000. ;TEST ITERATION COUNT *
2462 012126 012134 AUAA ;SCOPE ENTRY POINT *
2463
2464 ;*****
2465 ;TEST THAT READY DOES NOT CAUSE AN INTERRUPT WHEN THE PROCESSOR IS
2466 ;AT THE SAME PRIORITY AS THE TRANSMITTER INTERRUPT REQUEST LEVEL
2466 012130 104007 STTXV ;SET TX INTERRUPT SERVICE TO
2467 012132 012166 AUAC
2468 012134 016767 166756 165634 AUAA: MOV TXLVL,PSW ;SET PROCESSOR PRIORITY SAME AS TX PRIORITY
2469 012142 042777 000100 166734 BIC #BIT6,@TXCSR ;DISABLE TX INTERRUPTS
2470 012150 052777 000104 166726 BIS #104,@TXCSR ;ENABLE TX INTERRUPTS
2471 012156 000240 NOP
2472
2473
2474 012160 042777 000100 166716 AUAB: BIC #BIT6,@TXCSR ;OK IF NO INTERRUPT OCCURS. DISABLE INTERRUPTS
2475 012166 104012 AUAC: SCOPE ;SCOPE
2476 012170 022626 POPSP2 ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
2477 012172 104003 ERROR ;TX INTERRUPTED WITH PROCESSOR AT SAME
2478 012174 000774 BR AUAC ;PRIORITY AS THE TRANSMITTER
2479
2480
2481 012176 000067 AT67: 67 ;TEST NUMBER 67 *
2482 012200 012262 AT70 ;ADDRESS OF NEXT TEST *
2483 012202 000012 10. ;TEST ITERATION COUNT *
2484 012204 012212 AVAA ;SCOPE ENTRY POINT *
2485
2486 ;*****
2487 ;TEST THAT TRANSMITTER INTERRUPTS WHEN PROCESSOR IS AT PRIORITY ONE LEVEL
2488 ;LOWER THAN THE TRANSMITTER INTERRUPT PRIORITY.
2488 012206 104007 STTXV ;SET TX INTERRUPT SERVICE TO AVAB
2489 012210 012250 AVAB
2490 012212 042777 000100 166664 AVAA: BIC #BIT6,@TXCSR ;DISABLE TX INTERRUPTS
2491 012220 016767 166672 165550 MOV TXLVL,PSW ;SET PROCESSOR PRIORITY TO ONE LEVEL
2492 012226 162767 000040 165542 SUB #40,PSW ;LOWER THAN TX PRIORITY
2493 012234 052777 000104 166642 BIS #104,@TXCSR ;ENABLE TX INTERRUPTS
2494 012242 000240 NOP
2495 012244 104003 ERROR ;TX FAILED TO INTERRUPT
2496 012246 000401 BR AVAC
2497 012250 022626 AVAB: POPSP2 ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
2498 012252 042777 000100 166624 AVAC: BIC #BIT6,@TXCSR ;DISABLE TX INTERRUPTS
2499 012260 104012 SCOPE ;SCOPE
2500
2501
2502
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2503 ;*****
2504 012262 000070 AT70: 70 ;TEST NUMBER 70 *
2505 012264 012360 ;ADDRESS OF NEXT TEST *
2506 012266 000144 100. ;TEST ITERATION COUNT *
2507 012270 012272 AWAA ;SCOPE ENTRY POINT *
2508 ;*****
2509 ;TEST THAT TRANSMITTER DOES NOT REINTERRUPT AFTER THE INITIAL INTERRUPT HAS
2510 ;OCCURRED AND HAS BEEN SERVICED.
2511 012272 104007 AWAA: STTXV ;SET TX INTERRUPT SERVICE TO AWAC
2512 012274 012332 AWAC
2513 012276 042777 000100 166600 BIC #BIT6,@TXCSR ;DISABLE TX INTERRUPTS
2514 012304 005067 165466 CLR PSW ;SET PROCESSOR PRIORITY TO 0
2515 012310 052777 000104 166566 BIS #104,@TXCSR ;ENABLE TX INTERRUPTS
2516 012316 000240 NOP
2517 012320 104003 ERROR ;TRANSMITTER FAILED TO INTERRUPT
2518 012322 042777 000100 166554 AWAB: BIC #BIT6,@TXCSR ;DISABLE TX INTERRUPTS
2519 012330 104012 SCOPE ;SCOPE
2520 012332 012777 012352 166554 AWAC: MOV #AWAE,@TXVTR ;HERE IF INTERRUPT OCCURS. CHANGE EXIT
2521 012340 012716 012346 MOV #AWAD,@%6 ;POINTER TO AWAD AND EXIT INTERRUPT
2522 012344 000002 RTI
2523 012346 000240 AWAD: NOP ;OK IF NO INTERRUPT REOCCURS.
2524 012350 000764 BR AWAB
2525 012352 022626 AWAE: POPSP2 ;HERE IF INTERRUPT REOCCURS
2526 012354 104003 ERROR ;TX REINTERRUPTED AFTER RTI
2527 012356 000761 BR AWAB
2528
2529 ;*****
2530 012360 000071 AT71: 71 ;TEST NUMBER 71 *
2531 012362 012436 AT72 ;ADDRESS OF NEXT TEST *
2532 012364 000012 10. ;TEST ITERATION COUNT *
2533 012366 012404 AXAA ;SCOPE ENTRY POINT *
2534 ;*****
2535 ;TEST THAT RECEIVER DONE BIT IS ABLE TO INTERRUPT. IF THE INTERRUPT IS
2536 ;SERVICED IT WILL HAVE OCCURRED AT THE CORRECT VECTOR.
2537 012370 004767 170236 JSR 7,OVRLAY ;GO TO OVERLAY ROUTINE
2538 012374 104006 STRXV ;SET RX INTERRUPT SERVICE TO AXAB
2539 012376 012432 AXAB
2540 012400 004767 001710 JSR %7,STRXD ;SET RX DONE BIT
2541 012404 042777 000100 166466 AXAA: BIC #BIT6,@RXCSR ;DISABLE RX INTERRUPTS
2542 012412 005067 165360 CLR PSW ;SET PROCESSOR PRIORITY TO 0
2543 012416 052777 000100 166454 BIS #BIT6,@RXCSR ;ENABLE RX INTERRUPTS
2544 012424 000240 NOP
2545 012426 104003 ERROR ;RX FAILED TO INTERRUPT
2546 012430 000401 BR AXAC
2547 012432 022626 AXAB: POPSP2 ;HERE IF INTERRUPT OCCURS
2548 012434 104012 AXAC: SCOPE ;SCOPE
2549
2550
2551 ;*****
2552 AT72: 72 ;TEST NUMBER 72 *
2553 012436 000072 ;ADDRESS OF NEXT TEST *
2554 012440 012520 AT73 ;TEST ITERATION COUNT *
2555 012442 001750 1000. ;SCOPE ENTRY POINT *
2556 012444 012456 AYAA
2557 ;*****
2558 ;TEST THAT RECEIVER DONE BIT DOES NOT CAUSE AN INTERRUPT WHEN THE PROCESSOR
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2559 ;IS AT THE SAME PRIORITY LEVEL AS THE RECEIVER INTERRUPT REQUEST LEVEL
2560 012446 104006 STRXV ;SET RX INTERRUPT SERVICE TO AYAC
2561 012450 012512 AYAC
2562 012452 004767 001636 JSR %7,STRXD ;SET RX DONE BIT
2563 012456 042777 000100 166414 AYAA: BIC #BIT6,@RXCSR ;DISABLE RX INTERRUPTS
2564 012464 016767 166422 165304 MOV RXLVL,PSW ;SET PROCESSOR PRIORITY SAME AS RECEIVER'S
2565 012472 052777 000100 166400 BIS #BIT6,@RXCSR ;ENABLE RX INTERRUPTS
2566 012500 000240 NOP
2567 012502 042777 000100 166370 AYAB: BIC #BIT6,@RXCSR ;OK IF NO INTERRUPT. DISABLE RX INTERRUPTS
2568 012510 104012 SCOPE ;SCOPE
2569 012512 022626 AYAC: POPSP2 ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
2570 012514 104003 ERROR ;RX INTERRUPTED WITH PROCESOR AT SAME
2571 012516 000771 BR AYAB ;PRIORITY AS THE RECEIVER
2572
2573 ;*****
2574 012520 000073 AT73: 73 ;TEST NUMBER 73 *
2575 012522 012610 AT74 ;ADDRESS OF NEXT TEST *
2576 012524 000012 10. ;TEST ITERATION COUNT *
2577 012526 012540 AZAA ;SCOPE ENTRY POINT *
2578 ;*****
2579 ;TEST THAT RECEIVER DONE BIT CAUSES INTERRUPT WHEN PROCESSOR IS AT PRIORITY
2580 ;ONE LEVEL LOWER THAN THE RECEIVER'S INTERRUPT REQUEST LEVEL
2581 012530 104006 STRXV ;SET RX INTERRUPT TO AZAB
2582 012532 012576 AZAB
2583 012534 004767 001554 JSR %7,STRXD ;SET RX DONE BIT
2584 012540 042777 000100 166332 AZAA: BIC #BIT6,@RXCSR ;DISABLE RX INTERRUPTS
2585 012546 016767 166340 165222 MOV RXLVL,PSW ;SET PROCESSOR PRIORITY ONE LEVEL
2586 012554 162767 000040 165214 SUB #40,PSW ;LOWER THAN RECEIVER'S PRIORITY
2587 012562 052777 000100 166310 BIS #BIT6,@RXCSR ;ENABLE RX INTERRUPTS
2588 012570 000240 NOP
2589 012572 104003 ERROR ;RX FAILED TO INTERRUPT WITH PROCESSOR AT
2590 012574 000401 BR AZAC ;PRIORITY ONE LEVEL LOWER THAN RECEIVER'S
2591
2592 012576 022626 AZAB: POPSP2 ;HERE IF INTERRUPT OCCURS
2593 012600 042777 000100 166272 AZAC: BIC #BIT6,@RXCSR ;DISABLE RX INTERRUPTS
2594 012606 104012 SCOPE ;SCOPE
2595
2596
2597 ;*****
2598 012610 000074 AT74: 74 ;TEST NUMBER 74 *
2599 012612 012706 AT75 ;ADDRESS OF NEXT TEST *
2600 012614 000144 100. ;TEST ITERATION COUNT *
2601 012616 012624 AABA ;SCOPE ENTRY POINT *
2602 ;*****
2603 ;TEST THAT RECEIVER DOES NOT INTERRUPT AFTER THE INITIAL INTERRUPT HAS
2604 ;OCCURED AND DONE BIT HAS NOT BEEN CLEARED
2605 012620 004767 001470 JSR %7,STRXD ;SET RX DONE BIT
2606 012624 104006 AABA: STRXV ;SET RX INTERRUPT SERVICE TO AABC
2607 012626 012660 AABC
2608 012630 042777 000100 166242 BIC #BIT6,@RXCSR ;DISABLE RX INTERRUPTS
2609 012636 052777 000100 166234 BIS #BIT6,@RXCSR ;ENABLE RX INTERRUPTS
2610 012644 000240 NOP
2611 012646 104003 ERROR ;RX FAILED TO INTERRUPT
2612 012650 042777 000100 166222 AABB: BIC #BIT6,@RXCSR ;DISABLE RX INTERRUPTS
2613 012656 104012 SCOPE ;SCOPE
2614 012660 012777 012700 166222 AABC: MOV #AABE,@RXVTR ;HERE IF INTERRUPT OCCURS. CHANGE SERVICE TO
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2615 012666 012716 012674          MOV      #AABD,@%6      ;AABE, SET EXIT POINTER TO AABD
2616 012672 000002          RTI                    ;EXIT INTERRUPT SERVICE
2617 012674 000240          AABD:  NOP              ;OK IF NO INTERRUPT REOCCURS
2618 012676 000764          BR        AABB
2619 012700 022626          AABE:  POPSP2           ;HERE IF INTERRUPT REOCCURS
2620 012702 104003          ERROR          ;RX REINTERRUPTED AFTER RTI
2621 012704 000761          BR        AABB
2622
2623          ;*****
2624 012706 000075          AT75:  75              ;TEST NUMBER 75 *
2625 012710 012762          AT76          ;ADDRESS OF NEXT TEST *
2626 012712 000144          100.          ;TEST ITERATION COUNT *
2627 012714 012716          ABBA          ;SCOPE ENTRY POINT *
2628          ;*****
2629          ;TEST THAT DATA OVERRUN (RXCSR BIT 12) CLEARS THE DONE BIT (RXCSR BIT 7)
2630 012716 004767 001372          ABBA:  JSR      %7,STRXD ;SET RX DONE BIT
2631 012722 005077 166160          CLR      @TXBUF      ;LOAD TXBUF
2632 012726 104016          DELAY          ;WAIT 20 MSECS.
2633 012730 000024          20.
2634 012732 017767 166142 166320          MOV      @RXCSR,RXCST ;SAVE CONTENT OF RXCSR
2635 012740 105777 166134          TSTB     @RXCSR      ;SEE IF DONE BIT IS CLEAR
2636 012744 100001          BPL      ABBB        ;BRANCH IF DONE BIT IS CLEAR
2637 012746 104003          ERROR
2638 012750 104016          ABBB:  DELAY          ;WAIT FOR RX DONE TO SET.
2639 012752 000310          200.
2640 012754 005777 166122          TST     @RXBUF      ;CLEAR DONE BIT IF SET
2641 012760 104012          SCOPE          ;SCOPE
2642
2643
2644
2645          ;*****
2646 012762 000076          AT76:  76              ;TEST NUMBER 76 *
2647 012764 013040          AT77          ;ADDRESS OF NEXT TEST *
2648 012766 000144          100.          ;TEST ITERATION COUNT *
2649 012770 012776          ACBA          ;SCOPE ENTRY POINT *
2650          ;*****
2651          ;TEST THAT ERROR BIT (RXCSR BIT 15) IS ABLE TO CAUSE AN INTERRUPT
2652 012772 104006          STRXV          ;SET RX INTERRUPT SERVICE TO ACBB.
2653 012774 013034          ACBB
2654 012776 004767 001312          ACBA:  JSR      %7,STRXD ;SET RX DONE BIT
2655 013002 004767 001306          JSR      %7,STRXD      ;SET RX DATA OFLOW
2656 013006 042777 000100 166064          BIC     #BIT6,@RXCSR   ;DISABLE RX INTERRUPTS
2657 013014 005067 164756          CLR     PSW          ;SET PROCESSOR PRIORITY TO 0
2658 013020 052777 000100 166052          BIS     #BIT6,@RXCSR   ;ENABLE RX INTERRUPTS
2659 013026 000240          NOP
2660 013030 104003          ERROR          ;RX ERROR BIT FAILED TO CAUSE INTERRUPT
2661 013032 000401          BR        ACBC
2662 013034 022626          ACBB:  POPSP2           ;HERE IF INTERRUPT OCCURS. POP STOCK TWICE
2663 013036 104012          ACBC:  SCOPE          ;SCOPE
2664
2665
2666
2667          ;*****
2668 013040 000077          AT77:  77              ;TEST NUMBER 77
2669 013042 013222          AT100         ;ADDRESS OF NEXT TEST
2670 013044 000144          100.          ;TEST ITERATION COUNT
```



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2671 013046 013062 ANBB ;SCOPE ENTRY POINT
2672 ;*****
2673 ;TEST THAT PARITY INDICATOR OPERATES CORRECT.
2674 013050 004567 170052 ANBA: JSR 5,INBIN ;INITIALIZE BINARY COUNT PATTERN
2675 013054 052777 000004 166022 BIS #BIT2,@TXCSR ;SET MAINTENANCE BIT
2676 013062 112767 000144 166156 ANBB: MOVB #100.,CTRA ;GET CHARACTER COUNT
2677 013070 112767 000010 166151 ANBC: MOVB #8.,CTRA+1 ;GET CHARACTER BIT COUNT
2678 013076 004567 170130 JSR 5,GTBINP ;GET A CHARACTER (IN R1)
2679 013102 105777 165776 TSTB @TXCSR ;WAIT FOR
2680 013106 100375 BPL -4 ;TRANSMITTER READY FLAG
2681 013110 010177 165772 MOV %1,@TXBUF ;LOAD TRANSMITTER BUFFER
2682 013114 105777 165760 TSTB @RXCSR ;WAIT FOR
2683 013120 100375 BPL -4 ;RECEIVER READY FLAG
2684 013122 017767 165754 166102 MOV @RXBUF,CRBUFA ;GET RECEIVED CHARACTER
2685 013130 005000 CLR %0 ;CLEAR WORKING REGISTER
2686 013132 006067 166074 ANBD: ROR CRBUFA ;LOOK AT CHARACTER BITS
2687 013136 103001 BCC +4 ;AND COMPLEMENT R0 WHEN
2688 013140 005100 COM %0 ;A 1 IS RECEIVED
2689 013142 105367 166101 DECB CTRA+1 ;IF R0=1'S, ODD#1'S RECEIVED
2690 013146 001371 BNE ANBD ;IF R0=0'S, EVEN #1'S RECEIVED
2691 013150 032777 000040 165722 BIT #BIT5,@RXCSR ;TEST PARITY INDICATOR
2692 013156 001403 BEQ ANBE ;BRANCH IF INDICATES EVEN
2693 013160 005700 TST %0 ;TEST RECEIVED PARITY (IN R0)
2694 013162 001403 BEQ ANBF ;ERROR BRANCH
2695 013164 000412 BR ANBG ;OK BRANCH
2696 013166 005700 ANBE: TST %0 ;TEST RECEIVED PARITY (IN R0)
2697 013170 001410 BEQ ANBG ;OK BRANCH
2698 013172 104003 ANBF: ERROR ;TYPE PC
2699 013174 004567 170100 JSR 5,OACNV ;GO TO OCTAL
2700 013200 001232 CRBUFA ;TO ASCII
2701 013202 016424 AWAS ;ROUTINE AND
2702 013204 000003 3 ;CONVERT DATA
2703 013206 104015 ERROR1 ;TYPE
2704 013210 016424 AWAS ;DATA
2705 013212 105367 166030 ANBG: DECB CTRA ;DECREMENT CHARACTER COUNT
2706 013216 001324 BNE ANBC
2707 013220 104012 SCOPE
2708 000077 X=77
2709 000000 Y=0
2710 ;*****
2711 013222 000100 AT100: 100 ;ROUTINE #100 *
2712 013224 013240 AT101 ;ADDRESS OF NEXT TEST *
2713 013226 000003 3. ;ITERATION COUNT *
2714 013230 013232 DAT0 ;SCOPE ENTRY POINT *
2715 000100 X=X+1
2716 ;*****
2717 013232 004567 170274 DAT0: JSR 5,DATTST ;LOAD PARAMETERS & RUN TEST
2718 013236 000000 0 ;SEE NOTE 0 FOR DATA TEST PARAMETERS
2719 000001 Y=Y+1
2720 ;*****
2721 013240 000101 AT101: 101 ;ROUTINE #101 *
2722 013242 013256 AT102 ;ADDRESS OF NEXT TEST *
2723 013244 000003 3. ;ITERATION COUNT *
2724 013246 013250 DAT1 ;SCOPE ENTRY POINT *
2725 000101 X=X+1
2726 ;*****
```



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2727 013250 004567 170256 DAT1: JSR 5,DATTST ;LOAD PARAMETERS & RUN TEST
2728 013254 000001 1 ;SEE NOTE 1 FOR DATA TEST PARAMETERS
2729 000002 Y=Y+1
2730 ;*****
2731 013256 000102 AT102: 102 ;ROUTINE #102 *
2732 013260 013274 AT103 ;ADDRESS OF NEXT TEST *
2733 013262 000003 3. ;ITERATION COUNT *
2734 013264 013266 DAT2 ;SCOPE ENTRY POINT *
2735 000102 X=X+1
2736 ;*****
2737 013266 004567 170240 DAT2: JSR 5,DATTST ;LOAD PARAMETERS & RUN TEST
2738 013272 000002 2 ;SEE NOTE 2 FOR DATA TEST PARAMETERS
2739 000003 Y=Y+1
2740 ;*****
2741 013274 000103 AT103: 103 ;ROUTINE #103 *
2742 013276 013312 AT104 ;ADDRESS OF NEXT TEST *
2743 013300 000003 3. ;ITERATION COUNT *
2744 013302 013304 DAT3 ;SCOPE ENTRY POINT *
2745 000103 X=X+1
2746 ;*****
2747 013304 004567 170222 DAT3: JSR 5,DATTST ;LOAD PARAMETERS & RUN TEST
2748 013310 000003 3 ;SEE NOTE 3 FOR DATA TEST PARAMETERS
2749 000004 Y=Y+1
2750 ;*****
2751 013312 000104 AT104: 104 ;ROUTINE #104 *
2752 013314 013330 AT105 ;ADDRESS OF NEXT TEST *
2753 013316 000003 3. ;ITERATION COUNT *
2754 013320 013322 DAT4 ;SCOPE ENTRY POINT *
2755 000104 X=X+1
2756 ;*****
2757 013322 004567 170204 DAT4: JSR 5,DATTST ;LOAD PARAMETERS & RUN TEST
2758 013326 000004 4 ;SEE NOTE 4 FOR DATA TEST PARAMETERS
2759 000005 Y=Y+1
2760 ;*****
2761 013330 000105 AT105: 105 ;ROUTINE #105 *
2762 013332 013346 AT106 ;ADDRESS OF NEXT TEST *
2763 013334 000003 3. ;ITERATION COUNT *
2764 013336 013340 DAT5 ;SCOPE ENTRY POINT *
2765 000105 X=X+1
2766 ;*****
2767 013340 004567 170166 DAT5: JSR 5,DATTST ;LOAD PARAMETERS & RUN TEST
2768 013344 000005 5 ;SEE NOTE 5 FOR DATA TEST PARAMETERS
2769 000006 Y=Y+1
2770 ;*****
2771 013346 000106 AT106: 106 ;ROUTINE #106 *
2772 013350 013364 AT107 ;ADDRESS OF NEXT TEST *
2773 013352 000003 3. ;ITERATION COUNT *
2774 013354 013356 DAT6 ;SCOPE ENTRY POINT *
2775 000106 X=X+1
2776 ;*****
2777 013356 004567 170150 DAT6: JSR 5,DATTST ;LOAD PARAMETERS & RUN TEST
2778 013362 000006 6 ;SEE NOTE 6 FOR DATA TEST PARAMETERS
2779 000007 Y=Y+1
2780 ;*****
2781 013364 000107 AT107: 107 ;ROUTINE #107 *
2782 013366 013402 AT110 ;ADDRESS OF NEXT TEST *
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2783 013370 000003          3.          ; ITERATION COUNT          *
2784 013372 013374          DAT7        ; SCOPE ENTRY POINT        *
2785          000107          X=X+1
2786          ;*****
2787 013374 004567 170132  DAT7: JSR      5,DATTST    ; LOAD PARAMETERS & RUN TEST
2788 013400 000007          7          ; SEE NOTE 7 FOR DATA TEST PARAMETERS
2789          000010          Y=Y+1
2790          ;*****
2791 013402 000110          AT110: 110        ; ROUTINE #110              *
2792 013404 013420          AT111        ; ADDRESS OF NEXT TEST     *
2793 013406 000003          3.          ; ITERATION COUNT          *
2794 013410 013412          DAT10       ; SCOPE ENTRY POINT        *
2795          000110          X=X+1
2796          ;*****
2797 013412 004567 170114  DAT10: JSR      5,DATTST    ; LOAD PARAMETERS & RUN TEST
2798 013416 000010          10         ; SEE NOTE 10 FOR DATA TEST PARAMETERS
2799          000011          Y=Y+1
2800          ;*****
2801 013420 000111          AT111: 111        ; ROUTINE #111              *
2802 013422 013436          AT112        ; ADDRESS OF NEXT TEST     *
2803 013424 000003          3.          ; ITERATION COUNT          *
2804 013426 013430          DAT11       ; SCOPE ENTRY POINT        *
2805          000111          X=X+1
2806          ;*****
2807 013430 004567 170076  DAT11: JSR      5,DATTST    ; LOAD PARAMETERS & RUN TEST
2808 013434 000011          11         ; SEE NOTE 11 FOR DATA TEST PARAMETERS
2809          000012          Y=Y+1
2810          ;*****
2811 013436 000112          AT112: 112        ; ROUTINE #112              *
2812 013440 013454          AT113        ; ADDRESS OF NEXT TEST     *
2813 013442 000003          3.          ; ITERATION COUNT          *
2814 013444 013446          DAT12       ; SCOPE ENTRY POINT        *
2815          000112          X=X+1
2816          ;*****
2817 013446 004567 170060  DAT12: JSR      5,DATTST    ; LOAD PARAMETERS & RUN TEST
2818 013452 000012          12         ; SEE NOTE 12 FOR DATA TEST PARAMETERS
2819          000013          Y=Y+1
2820          ;*****
2821 013454 000113          AT113: 113        ; ROUTINE #113              *
2822 013456 013472          AT114        ; ADDRESS OF NEXT TEST     *
2823 013460 000003          3.          ; ITERATION COUNT          *
2824 013462 013464          DAT13       ; SCOPE ENTRY POINT        *
2825          000113          X=X+1
2826          ;*****
2827 013464 004567 170042  DAT13: JSR      5,DATTST    ; LOAD PARAMETERS & RUN TEST
2828 013470 000013          13         ; SEE NOTE 13 FOR DATA TEST PARAMETERS
2829          000014          Y=Y+1
2830          ;*****
2831 013472 000114          AT114: 114        ; ROUTINE #114              *
2832 013474 013510          AT115        ; ADDRESS OF NEXT TEST     *
2833 013476 000003          3.          ; ITERATION COUNT          *
2834 013500 013502          DAT14       ; SCOPE ENTRY POINT        *
2835          000114          X=X+1
2836          ;*****
2837 013502 004567 170024  DAT14: JSR      5,DATTST    ; LOAD PARAMETERS & RUN TEST
2838 013506 000014          14         ; SEE NOTE 14 FOR DATA TEST PARAMETERS
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2839          000015          Y=Y+1
2840          ;*****
2841 013510 000115          AT115: 115          ;ROUTINE #115          *
2842 013512 013526          AT116          ;ADDRESS OF NEXT TEST  *
2843 013514 000003          3.          ;ITERATION COUNT      *
2844 013516 013520          DAT15          ;SCOPE ENTRY POINT    *
2845          000115          X=X+1
2846          ;*****
2847 013520 004567 170006  DAT15: JSR      5,DATTST ;LOAD PARAMETERS & RUN TEST
2848 013524 000015          15          ;SEE NOTE 15 FOR DATA TEST PARAMETERS
2849          000016          Y=Y+1
2850          ;*****
2851 013526 000116          AT116: 116          ;ROUTINE #116          *
2852 013530 013544          AT117          ;ADDRESS OF NEXT TEST  *
2853 013532 000003          3.          ;ITERATION COUNT      *
2854 013534 013536          DAT16          ;SCOPE ENTRY POINT    *
2855          000116          X=X+1
2856          ;*****
2857 013536 004567 167770  DAT16: JSR      5,DATTST ;LOAD PARAMETERS & RUN TEST
2858 013542 000016          16          ;SEE NOTE 16 FOR DATA TEST PARAMETERS
2859          000017          Y=Y+1
2860          ;*****
2861 013544 000117          AT117: 117          ;ROUTINE #117          *
2862 013546 013562          AT120          ;ADDRESS OF NEXT TEST  *
2863 013550 000003          3.          ;ITERATION COUNT      *
2864 013552 013554          DAT17          ;SCOPE ENTRY POINT    *
2865          000117          X=X+1
2866          ;*****
2867 013554 004567 167752  DAT17: JSR      5,DATTST ;LOAD PARAMETERS & RUN TEST
2868 013560 000017          17          ;SEE NOTE 17 FOR DATA TEST PARAMETERS
2869          000020          Y=Y+1
2870          ;*****
2871 013562 000120          AT120: 120          ;ROUTINE #120          *
2872 013564 013600          AT121          ;ADDRESS OF NEXT TEST  *
2873 013566 000003          3.          ;ITERATION COUNT      *
2874 013570 013572          DAT20          ;SCOPE ENTRY POINT    *
2875          000120          X=X+1
2876          ;*****
2877 013572 004567 167734  DAT20: JSR      5,DATTST ;LOAD PARAMETERS & RUN TEST
2878 013576 000020          20          ;SEE NOTE 20 FOR DATA TEST PARAMETERS
2879          000021          Y=Y+1
2880          ;*****
2881 013600 000121          AT121: 121          ;ROUTINE #121          *
2882 013602 013616          AT122          ;ADDRESS OF NEXT TEST  *
2883 013604 000003          3.          ;ITERATION COUNT      *
2884 013606 013610          DAT21          ;SCOPE ENTRY POINT    *
2885          000121          X=X+1
2886          ;*****
2887 013610 004567 167716  DAT21: JSR      5,DATTST ;LOAD PARAMETERS & RUN TEST
2888 013614 000021          21          ;SEE NOTE 21 FOR DATA TEST PARAMETERS
2889          000022          Y=Y+1
2890          ;*****
2891 013616 000122          AT122: 122          ;ROUTINE #122          *
2892 013620 013634          AT123          ;ADDRESS OF NEXT TEST  *
2893 013622 000003          3.          ;ITERATION COUNT      *
2894 013624 013626          DAT22          ;SCOPE ENTRY POINT    *
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2895          000122          X=X+1
2896          ;*****
2897 013626 004567 167700  DAT22: JSR      5,DATTST      ;LOAD PARAMETERS & RUN TEST
2898 013632 000022          22          ;SEE NOTE 22 FOR DATA TEST PARAMETERS
2899          000023          Y=Y+1
2900          ;*****
2901 013634 000123          AT123: 123          ;ROUTINE #123
2902 013636 013652          AT124          ;ADDRESS OF NEXT TEST
2903 013640 000003          3.          ;ITERATION COUNT
2904 013642 013644          DAT23          ;SCOPE ENTRY POINT
2905          000123          X=X+1
2906          ;*****
2907 013644 004567 167662  DAT23: JSR      5,DATTST      ;LOAD PARAMETERS & RUN TEST
2908 013650 000023          23          ;SEE NOTE 23 FOR DATA TEST PARAMETERS
2909          000024          Y=Y+1
2910          ;*****
2911 013652 000124          AT124: 124          ;ROUTINE #124
2912 013654 013670          AT125          ;ADDRESS OF NEXT TEST
2913 013656 000003          3.          ;ITERATION COUNT
2914 013660 013662          DAT24          ;SCOPE ENTRY POINT
2915          000124          X=X+1
2916          ;*****
2917 013662 004567 167644  DAT24: JSR      5,DATTST      ;LOAD PARAMETERS & RUN TEST
2918 013666 000024          24          ;SEE NOTE 24 FOR DATA TEST PARAMETERS
2919          000025          Y=Y+1
2920          ;*****
2921 013670 000125          AT125: 125          ;ROUTINE #125
2922 013672 013706          AT126          ;ADDRESS OF NEXT TEST
2923 013674 000003          3.          ;ITERATION COUNT
2924 013676 013700          DAT25          ;SCOPE ENTRY POINT
2925          000125          X=X+1
2926          ;*****
2927 013700 004567 167626  DAT25: JSR      5,DATTST      ;LOAD PARAMETERS & RUN TEST
2928 013704 000025          25          ;SEE NOTE 25 FOR DATA TEST PARAMETERS
2929          000026          Y=Y+1
2930          ;*****
2931 013706 000126          AT126: 126          ;ROUTINE #126
2932 013710 013724          AT127          ;ADDRESS OF NEXT TEST
2933 013712 000003          3.          ;ITERATION COUNT
2934 013714 013716          DAT26          ;SCOPE ENTRY POINT
2935          000126          X=X+1
2936          ;*****
2937 013716 004567 167610  DAT26: JSR      5,DATTST      ;LOAD PARAMETERS & RUN TEST
2938 013722 000026          26          ;SEE NOTE 26 FOR DATA TEST PARAMETERS
2939          000027          Y=Y+1
2940          ;*****
2941 013724 000127          AT127: 127          ;ROUTINE #127
2942 013726 013742          AT130          ;ADDRESS OF NEXT TEST
2943 013730 000003          3.          ;ITERATION COUNT
2944 013732 013734          DAT27          ;SCOPE ENTRY POINT
2945          000127          X=X+1
2946          ;*****
2947 013734 004567 167572  DAT27: JSR      5,DATTST      ;LOAD PARAMETERS & RUN TEST
2948 013740 000027          27          ;SEE NOTE 27 FOR DATA TEST PARAMETERS
2949          000030          Y=Y+1
2950          ;*****

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2951 013742 000130 AT130: 130 ;ROUTINE #130 *
2952 013744 013760 AT131 ;ADDRESS OF NEXT TEST *
2953 013746 000003 3. ;ITERATION COUNT *
2954 013750 013752 DAT30 ;SCOPE ENTRY POINT *
2955 000130 X=X+1
2956 ;*****
2957 013752 004567 167554 DAT30: JSR 5,DATTST ;LOAD PARAMETERS & RUN TEST
2958 013756 000030 30 ;SEE NOTE 30 FOR DATA TEST PARAMETERS
2959 000031 Y=Y+1
2960 ;*****
2961 013760 000131 AT131: 131 ;ROUTINE #131 *
2962 013762 013776 AT132 ;ADDRESS OF NEXT TEST *
2963 013764 000003 3. ;ITERATION COUNT *
2964 013766 013770 DAT31 ;SCOPE ENTRY POINT *
2965 000131 X=X+1
2966 ;*****
2967 013770 004567 167536 DAT31: JSR 5,DATTST ;LOAD PARAMETERS & RUN TEST
2968 013774 000031 31 ;SEE NOTE 31 FOR DATA TEST PARAMETERS
2969 000032 Y=Y+1
2970 ;*****
2971 013776 000132 AT132: 132 ;ROUTINE #132 *
2972 014000 014014 AT133 ;ADDRESS OF NEXT TEST *
2973 014002 000003 3. ;ITERATION COUNT *
2974 014004 014006 DAT32 ;SCOPE ENTRY POINT *
2975 000132 X=X+1
2976 ;*****
2977 014006 004567 167520 DAT32: JSR 5,DATTST ;LOAD PARAMETERS & RUN TEST
2978 014012 000032 32 ;SEE NOTE 32 FOR DATA TEST PARAMETERS
2979 000033 Y=Y+1
2980 ;*****
2981 014014 000133 AT133: 133 ;ROUTINE #133 *
2982 014016 014032 AT134 ;ADDRESS OF NEXT TEST *
2983 014020 000003 3. ;ITERATION COUNT *
2984 014022 014024 DAT33 ;SCOPE ENTRY POINT *
2985 000133 X=X+1
2986 ;*****
2987 014024 004567 167502 DAT33: JSR 5,DATTST ;LOAD PARAMETERS & RUN TEST
2988 014030 000033 33 ;SEE NOTE 33 FOR DATA TEST PARAMETERS
2989 000034 Y=Y+1
2990 ;*****
2991 014032 000134 AT134: 134 ;ROUTINE #134 *
2992 014034 014050 AT135 ;ADDRESS OF NEXT TEST *
2993 014036 000003 3. ;ITERATION COUNT *
2994 014040 014042 DAT34 ;SCOPE ENTRY POINT *
2995 000134 X=X+1
2996 ;*****
2997 014042 004567 167464 DAT34: JSR 5,DATTST ;LOAD PARAMETERS & RUN TEST
2998 014046 000034 34 ;SEE NOTE 34 FOR DATA TEST PARAMETERS
2999 000035 Y=Y+1
3000 ;*****
3001 014050 000135 AT135: 135 ;ROUTINE #135 *
3002 014052 014066 AT136 ;ADDRESS OF NEXT TEST *
3003 014054 000003 3. ;ITERATION COUNT *
3004 014056 014060 DAT35 ;SCOPE ENTRY POINT *
3005 000135 X=X+1
3006 ;*****
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3007 014060 004567 167446      DAT35: JSR      5,DATTST      ;LOAD PARAMETERS & RUN TEST
3008 014064 000035              35                          ;SEE NOTE 35 FOR DATA TEST PARAMETERS
3009              000036              Y=Y+1
3010      ;*****
3011 014066 000136      AT136: 136                      ;ROUTINE #136 *
3012 014070 014104              AT137                      ;ADDRESS OF NEXT TEST *
3013 014072 000003              3.                          ;ITERATION COUNT *
3014 014074 014076      DAT36                      ;SCOPE ENTRY POINT *
3015              000136              X=X+1
3016      ;*****
3017 014076 004567 167430      DAT36: JSR      5,DATTST      ;LOAD PARAMETERS & RUN TEST
3018 014102 000036              36                          ;SEE NOTE 36 FOR DATA TEST PARAMETERS
3019              000037              Y=Y+1
3020      ;*****
3021 014104 000137      AT137: 137                      ;ROUTINE #137 *
3022 014106 014122              AT140                      ;ADDRESS OF NEXT TEST *
3023 014110 000003              3.                          ;ITERATION COUNT *
3024 014112 014114      DAT37                      ;SCOPE ENTRY POINT *
3025              000137              X=X+1
3026      ;*****
3027 014114 004567 167412      DAT37: JSR      5,DATTST      ;LOAD PARAMETERS & RUN TEST
3028 014120 000037              37                          ;SEE NOTE 37 FOR DATA TEST PARAMETERS
3029              000040              Y=Y+1
3030
3031
3032 014122 000140      AT140: 140                      ;TEST NUMBER 140
3033 014124 014236              AT141                      ;ADDRESS OF NEXT TEST
3034 014126 000012              10.                         ;TEST ITERATION COUNT
3035 014130 014152      APBA                      ;SCOPE ENTRY POINT
3036      ;*****
3037      ;DATA TEST USING JUMPER CONNECTOR. TX SPEED = 11, RX SPEED = 11,
3038      ;CHAR LENGTH = 11, STOP CODE = 1. USES SPECIAL BINARY COUNT PATTERN
3039      ;FOR DATA. NO INTERRUPT.
3040
3041 014132 012777 000430 164744      MOV      #430,@TXCSR      ;SET TX SPEED = 11, STOP CODE = 1
3042 014140 012777 003031 164732      MOV      #3031,@RXCSR     ;SET RX SPEED = 11, CHAR. LENGTH = 11
3043 014146 004767 166754              JSR      7,INBIN          ;INITIALIZE BINARY COUNT PATTERN
3044 014152 012767 001750 165066      APBA: MOV      #1000.,CTRA ;SET CHARACTER COUNT TO 1000
3045 014160 105777 164720      APBB: TSTB     @TXCSR      ;WAIT FOR TX READY
3046 014164 100375              BPL      #-4
3047 014166 004767 167040              JSR      7,GTBINP         ;GET BINARY CHARACTER
3048 014172 110167 165034              MOVB     %1,CRBUFA        ;SAVE CHAR IN CRBUFA AND
3049 014176 042767 177740 165026      BIC      #177740,CRBUFA   ;MASK OFF ALL BUT 5 LSB.
3050 014204 110177 164676              MOVB     %1,@TXBUF        ;LOAD CHAR.
3051 014210 105777 164664              TSTB     @RXCSR          ;WAIT FOR RECEIVER
3052 014214 100375              BPL      #-4             ;TO RECEIVE CHARACTER
3053 014216 117767 164660 165004      MOVB     @RXBUF,CRBUF     ;LOAD RECEIVED DATA INTO CRBUF
3054 014224 104004              DATCHK                      ;CHECK DATA
3055 014226 005367 165014              DEC      CTRA             ;TESTED 1000 CHARACTERS
3056 014232 001352              BNE     APBB             ;BRANCH IF NOT
3057 014234 104012              SCOPE                      ;YES. SCOPE
3058      ;*****
3059 014236 000141      AT141: 141                      ;TEST NUMBER 141
3060 014240 177777              ATLAST                      ;ADDRESS OF NEXT TEST
3061 014242 000144              100.                        ;TEST ITERATION COUNT
3062 014244 014246      AQBA                      ;SCOPE ENTRY POINT

```



```
3063 ;*****
3064 ;TEST THAT WHEN RXCSR BIT 1 IS SET THAT THE OUTPUT DATA LINE
3065 ;IS PULLED TO A SPACE.
3066
3067 014246 012777 000004 164630 AQBA: MOV #BIT2,@TXCSR ;SET MAINTENANCE BIT IN TXCSR
3068 014254 012777 000002 164616 MOV #BIT1,@RXCSR
3069 014262 012777 000377 164616 MOV #377,@TXBUF ;LOAD BUFFER
3070 014270 105777 164604 TSTB @RXCSR ;WAIT FOR RECEIVER
3071 014274 100375 BPL -4 ;TO RECEIVE CHARACTER
3072 014276 027727 164600 000000 CMP @RXBUF,#0 ;CHARACTER RECEIVED SHOULD BE 0
3073 014304 001401 BEQ +4
3074 014306 104003 ERROR ;CHARACTER OTHER THAN 0
3075 014310 104011 SRESET ;ISSUE RESET
3076 014312 104012 SCOPE
3077 ;SUBROUTINE TO SET RXCSR DONE BIT.
3078 014314 052777 000004 164562 STRXD: BIS #BIT2,@TXCSR ;SET MAINTENANCE BIT.
3079 014322 005077 164560 CLR @TXBUF ;LOAD TXBUF.
3080 014326 104016 DELAY ;DELAY 200 MSECS.
3081 014330 000310 200.
3082 014332 000207 RTS %7 ;EXIT.
3083 ;SUBROUTINE TO CHECK THAT CTRA THROUGH CTRD CONTAIN DESCENDING VALUES.
3084 014334 026767 164706 164706 CMPT: CMP CTRA,CTRB
3085 014342 101424 BLOS CMPTA
3086 014344 026767 164676 164700 CMP CTRA,CTRC
3087 014352 101420 BLOS CMPTA
3088 014354 026767 164666 164672 CMP CTRA,CTRD
3089 014362 101414 BLOS CMPTA
3090 014364 026767 164660 164660 CMP CTRB,CTRC
3091 014372 101410 BLOS CMPTA
3092 014374 026767 164650 164652 CMP CTRB,CTRD
3093 014402 101404 BLOS CMPTA
3094 014404 026767 164642 164642 CMP CTRC,CTRD
3095 014412 101002 BHI CMPTB
3096 014414 062716 000002 CMPTA: ADD #2,@%6
3097 014420 000207 CMPTB: RTS %7
3098
3099
3100 ;*****
3101 ;PRG1 - TRANSMITTER SCOPE LOOP
3102 ;*****
3103 014422 104000 PRG1: TYPE ;TYPE PROGRAM TITLE.
3104 014424 016043 PITIT
3105 014426 004567 166350 JSR 5,LINSEL ;GO GET LINE # FROM USER
3106 014432 004767 000302 JSR %7,SETPAR ;GO SET PARAMETERS.
3107 014436 104000 TYPE ;TYPE SELECT CHAR AND DELAY.
3108 014440 016275 SELCAD
3109 014442 000000 HALT ;WAIT FOR USER.
3110 014444 116767 163120 000010 PRG1A: MOVB SR,PRG1B ;DELAY COUNT TO PRG1B.
3111 014452 116777 163113 164426 MOVB SR+1,@TXBUF ;LOAD TXBUF.
3112 014460 104016 DELAY ;DELAY # OF MSECS. SET AT SR.
3113 014462 000000 PRG1B: OPEN
3114 014464 000767 BR PRG1A ;REPEAT.
3115 ;*****
3116 ;PRG2 - RECEIVER SCOPE LOOP.
3117 ;*****
3118 014466 104000 PRG2: TYPE ;TYPE PROGRAM TITLE.
```



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3119 014470 016103 P2TIT
3120 014472 004567 166304 JSR 5,LINSEL ;GO GET LINE # FROM USER
3121 014476 004767 000236 JSR %7,SETPAR ;GO SET PARAMETERS.
3122 014502 104000 TYPE ;TYPE SELECT CHAR AND DELAY.
3123 014504 016275 SELCAD
3124 014506 000000 HALT ;WAIT FOR USER.
3125 014510 004767 000256 PRG2A: JSR 7,STPARB ;RELOAD PARAMETERS
3126 014514 052777 000004 164362 BIS #BIT2,@TXCSR ;SET MAINTENANCE BIT.
3127 014522 116767 163042 000010 MOVB SR,PRG2B ;DELAY COUNT TO PRG2B.
3128 014530 116777 163035 164350 MOVB SR+1,@TXBUF ;LOAD TXBUF.
3129 014536 104016 DELAY ;DELAY # OF MSECS. SET IN SR.
3130 014540 000000 PRG2B: OPEN
3131 014542 017700 164334 MOV @RXBUF,%0 ;RXBUF CONTENTS TO %0.
3132 014546 000005 RESET ;DISPLAY CONTENTS OF RXBUF (IN R0),
3133 014550 000005 RESET ;BY ISSUING 5 RESET INSTRUCTIONS
3134 014552 000005 RESET
3135 014554 000005 RESET
3136 014556 000005 RESET
3137 014560 000753 BR PRG2A
3138
3139 :*****
3140 :PRG3 - SINGLE CHARACTER MAINTENANCE MODE DATA TEST.
3141 :*****
3141 014562 104000 PRG3: TYPE ;TYPE PROGRAM TITLE.
3142 014564 016604 P3TIT
3143 014566 004567 166210 JSR 5,LINSEL ;GO GET LINE # FROM USER
3144 014572 004767 000142 JSR %7,SETPAR ;SET PARAMETERS.
3145 014576 104000 TYPE ;TYPE: SELECT CHARACTER.
3146 014600 016750 SELCAR
3147 014602 000000 HALT
3148 014604 116767 162760 164420 PRG3A: MOVB SR,CRBUFA ;MOVE DATA CHAR TO CRBUFA.
3149 014612 004767 000040 JSR %7,MOUTIN ;GO OUTPUT, RECEIVE, AND CHECK DATA.
3150 014616 000772 BR PRG3A
3151
3152 :*****
3153 :PRG4 - SPECIAL BINARY COUNT MAINTENANCE MODE DATA TEST.
3154 :*****
3154 014620 104000 PRG4: TYPE ;TYPE PROGRAM TITLE.
3155 014622 016654 P4TIT
3156 014624 004567 166152 JSR 5,LINSEL ;GO GET LINE # FROM USER
3157 014630 004767 000104 JSR %7,SETPAR ;SET PARAMETERS.
3158 014634 004767 166266 JSR %7,INBIN ;INITIALIZE BINARY COUNT.
3159 014640 004767 166366 PRG4A: JSR %7,GTBINP ;GET BINARY CHARACTER.
3160 014644 110167 164362 MOVB %1,CRBUFA ;SAVE AT CRBUFA.
3161 014650 004767 000002 JSR %7,MOUTIN ;GO OUTPUT, RECEIVE, AND CHECK DATA.
3162 014654 000771 BR PRG4A ;REPEAT.
3163 :SUBROUTINE TO OUTPUT, RECEIVE, AND CHECK DATA WITH MAINTENANCE BIT SET.
3164 014656 032767 000400 162704 MOUTIN: BIT #BIT8,SR ;SEE IF BIT 8 IS SET.
3165 014664 001001 BNE .+4 ;BRANCH IF SET.
3166 014666 104002 STALL ;SET. DO A RANDOM STALL.
3167 014670 105777 164210 TSTB @TXCSR ;WAIT FOR TX READY.
3168 014674 100375 BPL .-4
3169 014676 052777 000004 164200 BIS #BIT2,@TXCSR ;SET MAINTENANCE BIT.
3170 014704 016777 164322 164174 MOV CRBUFA,@TXBUF ;LOAD TXBUF.
3171 014712 046767 164316 164312 BIC CARMSK,CRBUFA ;MASK OFF NON-EXPECTED BITS.
3172 014720 105777 164154 TSTB @RXCSR ;WAIT FOR RECEIVER DONE BIT.
3173 014724 100375 BPL .-4
3174 014726 017767 164150 164274 MOV @RXBUF,CRBUF ;MOVE CHAR IN RX BUFFER TO CRBUF.
```



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3175 014734 104004          DATCHK          ;COMPARE EXPECTED AND RECEIVED DATA
3176 014736 000207          RTS             %7          ;EXIT.
3177
3178
3179          ;SUBROUTINE TO SET STOP CODE,SPEED, AND CHARACTER LENGTH PARAMETERS SET
3180          ;IN SR INTO TXCSR AND RXCSR.
3181 014740 104000          SETPAR: TYPE          ;TYPE: SELECT PARAMETERS.
3182 014742 016140          SELPAR
3183 014744 000000          HALT
3184 014746 016767 162616 164312  MOV          SR,SRT          ;WAIT FOR USER.
3185 014754 004567 166320  JSR          5,OACNV        ;SR TO SRT.
3186 014760 001266          SRT
3187 014762 016745          APARM
3188 014764 000002          2
3189 014766 104000          TYPE
3190 014770 016727          PARMTS
3191 014772 032767 000020 164266 STPARB: BIT          #BIT4,SRT          ;SEE IF SR BIT 4 IS SET.
3192 015000 001403          BEQ          .+10         ;BRANCH IF NOT SET.
3193 015002 052777 000400 164074  BIS          #BIT8,@TXCSR   ;SET. SET STOP CODE TO A 1.
3194 015010 032767 000010 164250  BIT          #BIT3,SRT     ;SEE IF SR BIT 3 IS SET.
3195 015016 001406          BEQ          .+16         ;BRANCH IF NOT SET.
3196 015020 052777 000020 164056  BIS          #BIT4,@TXCSR   ;SET BIT4 IN TXCSR AND RXCSR
3197 015026 052777 000020 164044  BIS          #BIT4,@RXCSR   ;(MSB OF SPEED SELECT BITS.)
3198 015034 032767 000004 164224  BIT          #BIT2,SRT     ;SEE IF SR BIT 2 IS SET.
3199 015042 001406          BEQ          .+16         ;BRANCH IF NOT SET.
3200 015044 052777 000010 164032  BIS          #BIT3,@TXCSR   ;SET BIT3 IN TXCSR AND RXCSR
3201 015052 052777 000010 164020  BIS          #BIT3,@RXCSR   ;(LSB OF SPEED SELECT BITS).
3202 015060 012767 177400 164146  MOV          #177400,CARMSK ;SET CHARACTER MASK TO 8 BITS.
3203 015066 032767 000002 164172  BIT          #BIT1,SRT     ;SEE IF SR BIT 1 IS SET.
3204 015074 001421          BEQ          STPARA       ;BRANCH IF NOT SET.
3205 015076 012767 177700 164130  MOV          #177700,CARMSK ;CHANGE CHAR MASK TO 6 BITS.
3206 015104 052777 002000 163766  BIS          #BIT10,@RXCSR  ;SET RXCSR BIT 10(MSB OF CHAR LENGTH BITS.
3207 015112 032767 000001 164146  BIT          #BIT0,SRT     ;SEE IF SR BIT0 IS SET.
3208 015120 001406          BEQ          .+16         ;BRANCH IF NOT SET.
3209 015122 012767 177740 164104  MOV          #177740,CARMSK ;CHANGE CHAR MASK TO 5 BITS.
3210 015130 052777 001000 163742  BIS          #BIT9,@RXCSR  ;SET RXCSR BIT9 (LSB OF CHAR LENGTH BITS).
3211 015136 000207          RTS             %7          ;EXIT.
3212 015140 032767 000001 164120 STPARA: BIT          #BIT0,SRT          ;SEE IF SR BIT0 IS SET.
3213 015146 001773          BEQ          STPARA-2     ;BRANCH IF NOT SET.
3214 015150 012767 177600 164056  MOV          #177600,CARMSK ;CHANGE CHAR MASK TO 7 BITS.
3215 015156 000764          BR          STPARA-10
3216
3217
3218          ;VECTOR ASSIGNMENT TABLE
3219 015160 000300          VECTAB: 300
3220 015162 000310          310
3221 015164 000320          320
3222 015166 000330          330
3223 015170 000340          340
3224 015172 000350          350
3225 015174 000360          360
3226 015176 000370          370
3227 015200 000400          400
3228 015202 000410          410
3229 015204 000420          420
3230 015206 000430          430
;LINE 0 VECTOR
;LINE 1 VECTOR
;LINE 2  "
;   " 3  "
;   " 4  "
;   " 5  "
;   " 6  "
;   " 7  "
;   " 10 "
;   " 11 "
;   " 12 "
;   " 13 "

```


3231	015210	000440	440	:	"	14	"
3232	015212	000450	450	:	"	15	"
3233	015214	000460	460	:	"	16	"
3234	015216	000470	470	:	"	17	"
3235	015220	000500	500	:	"	20	"
3236	015222	000510	510	:	"	21	"
3237	015224	000520	520	:	"	22	"
3238	015226	000530	530	:	"	23	"
3239	015230	000540	540	:	"	24	"
3240	015232	000550	550	:	"	25	"
3241	015234	000560	560	:	"	26	"
3242	015236	000570	570	:	"	27	"
3243	015240	000600	600	:	"	30	"
3244	015242	000610	610	:	"	31	"
3245	015244	000620	620	:	"	32	"
3246	015246	000630	630	:	"	33	"
3247	015250	000640	640	:	"	34	"
3248	015252	000650	650	:	"	35	"
3249	015254	000660	660	:	"	36	"
3250	015256	000670	670	:	"	37	"

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3251
3252
3253
3254
3255 015260 050045 040      :ASCII MESSAGES
3256 015263 040 020040 052040 EMO: .ASCII 'XP '
3257 015270 040      APNUMB: .ASCII ' T '
3258 015271 040 020040 050040 ATNUMB: .ASCII ' PC '
3259 015276 020103      APC: .ASCII ' @'
3260 015300 020040 020040 020040
3261 015306 020040 100
3262 015311 045 050045 043522 POTIT: .ASCII '%XPRGO - INPUT-OUTPUT LOGIC TESTS. '
3263 015316 020060 020055 047111
3264 015324 052520 026524 052517
3265 015332 050124 052125 046040
3266 015340 043517 041511 052040
3267 015346 051505 051524 020056
3268 015354 044504 041523 047117 .ASCII 'DISCONNECT DC11 FROM MODEM.%'
3269 015362 042516 052103 042040
3270 015370 030503 020061 051106
3271 015376 046517 046440 042117
3272 015404 046505 022456
3273 015410 047101 020104 047503 .ASCII 'AND CONNECT JUMPER TO CABLE.%@'
3274 015416 047116 041505 020124
3275 015424 052512 050115 051105
3276 015432 052040 020117 040503
3277 015440 046102 027105 040045
3278 015446 054124 051503 020122 ATXCSR: .ASCII 'TXCSR S/B: '
3279 015454 027523 035102 040 ATXSB: .ASCII ' WAS: '
3280 015461 040 020040 020040
3281 015466 020040 053440 051501
3282 015474 020072
3283 015476 020040 020040 020040 ATXWAS: .ASCII ' @'
3284 015504 100
3285 015505 122 041530 051123 ARXCSR: .ASCII 'RXCSR S/B: '
3286 015512 051440 041057 020072

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SEQ 0060

3287	015520	020040	020040	020040	ARXSB: .ASCII ' WAS: '
3288	015526	020040	040527	035123	
3289	015534	040			
3290	015535	040	020040	020040	ARXWAS: .ASCII ' @'
3291	015542	040040			
3292	015544	054124	051440	042520	ETXTIM: .ASCII 'TX SPEEDS NOT IN ASCENDING ORDER.@'
3293	015552	042105	020123	047516	
3294	015560	020124	047111	040440	
3295	015566	041523	047105	044504	
3296	015574	043516	047440	042122	
3297	015602	051105	040056		
3298	015606	044524	042515	043040	ESTPCD: .ASCII 'TIME FOR 2 STOP CODE OP LESS THAN FOR 1.@'
3299	015614	051117	031040	051440	
3300	015622	047524	020120	047503	
3301	015630	042504	047440	020120	
3302	015636	042514	051523	052040	
3303	015644	040510	020116	047506	
3304	015652	020122	027061	100	
3305	015657	124	020130	044103	ETCLGT: .ASCII 'TX CHAR LENGTHS NOT IN DESCENDING ORDER.@'
3306	015664	051101	046040	047105	
3307	015672	052107	051510	047040	
3308	015700	052117	044440	020116	
3309	015706	042504	041523	047105	
3310	015714	044504	043516	047440	
3311	015722	042122	051105	040056	
3312	015730	054122	051440	042520	ERXTIM: .ASCII 'RX SPEEDS NOT IN ASCENDING ORDER.@'
3313	015736	042105	020123	047516	
3314	015744	020124	047111	040440	
3315	015752	041523	047105	044504	
3316	015760	043516	047440	042122	
3317	015766	051105	040056		
3318	015772	054122	041440	040510	ERCLGT: .ASCII 'RX CHAR LENGTHS NOT IN DESCENDING ORDER.@'
3319	016000	020122	042514	043516	
3320	016006	044124	020123	047516	
3321	016014	020124	047111	042040	
3322	016022	051505	042503	042116	
3323	016030	047111	020107	051117	
3324	016036	042504	027122	100	
3325	016043	045	050045	043522	P1TIT: .ASCII '%XPRG1 - TRANSMITTER SCOPE LOOP@'
3326	016050	020061	020055	051124	
3327	016056	047101	046523	052111	
3328	016064	042524	020122	041523	
3329	016072	050117	020105	047514	
3330	016100	050117	100		
3331	016103	045	050045	043522	P2TIT: .ASCII '%XPRG2 - RECEIVER SCOPE LOOP@'
3332	016110	020062	020055	042522	
3333	016116	042503	053111	051105	
3334	016124	051440	047503	042520	
3335	016132	046040	047517	040120	
3336	016140	051445	052105	050040	SELPAR: .ASCII '%SET PARAMETERS IN SR AS FOLLOWS:'
3337	016146	051101	046501	052105	
3338	016154	051105	020123	047111	
3339	016162	051440	020122	051501	
3340	016170	043040	046117	047514	
3341	016176	051527	072		
3342	016201	045	051123	020064	.ASCII '%SR4 = STOP CODE%SR3 AND 2 = SPEED'

3343	016206	020075	052123	050117
3344	016214	041440	042117	022505
3345	016222	051123	020063	047101
3346	016230	020104	020062	020075
3347	016236	050123	042505	104
3348	016243	045	051123	020061
3349	016250	047101	020104	020060
3350	016256	020075	044103	051101
3351	016264	046040	047105	052107
3352	016272	022510	100	
3353	016275	045	042523	020124
3354	016302	042524	052123	041440
3355	016310	040510	020122	047503
3356	016316	042504	044440	020116
3357	016324	051123	032461	051455
3358	016332	034122	020054	042523
3359	016340	020124	042504	040514
3360	016346	020131	044524	042515
3361	016354	044440	020116	051123
3362	016362	026467	051123	027060
3363	016370	100		
3364	016371	040	042040	052101
3365	016376	020101	051105	020122
3366	016404	051440	041057	020072
3367	016412	020040	020040	053440
3368	016420	051501	020072	
3369	016424	020040	040040	
3370	016430	037445	100	
3371	016433	045	042523	020124
3372	016440	042504	044523	042522
3373	016446	020104	051123	047440
3374	016454	052120	047511	051516
3375	016462	020056	047516	046522
3376	016470	046101	047440	042520
3377	016476	040522	044524	047117
3378	016504	040		
3379	016505	111	020123	044527
3380	016512	044124	051440	020122
3381	016520	020075	030060	030060
3382	016526	030060	100	
3383	016531	045	047111	047503
3384	016536	051122	041505	020124
3385	016544	047522	052125	047111
3386	016552	020105	042523	042514
3387	016560	052103	042105	040056
3388	016566	050045	047522	051107
3389	016574	046501	042440	042116
3390	016602	040056		
3391	016604	022445	051120	031507
3392	016612	051455	047111	046107
3393	016620	020105	044103	051101
3394	016626	046440	044501	052116
3395	016634	046440	042117	020105
3396	016642	040504	040524	052040
3397	016650	051505	040124	
3398	016654	022445	051120	032107

.ASCII '%SR1 AND 0 = CHAR LENGTH%'

SELCAD: .ASCII '%SET TEST CHAR CODE IN SR15-SR8, SET DELAY TIME IN SR7-SR0.'

ERDAT: .ASCII ' DATA ERR S/B: '

AASB: .ASCII ' WAS: '

AWAS: .ASCII ' @'

AINPRG: .ASCII '%?@'

ASETSR: .ASCII '%SET DESIRED SR OPTIONS. NORMAL OPERATION '

.ASCII '%IS WITH SR = 000000%'

AINCRT: .ASCII '%INCORRECT ROUTINE SELECTED.'

APGEND: .ASCII '%PROGRAM END.'

P3TIT: .ASCII '%%PRG3-SINGLE CHAR MAINT MODE DATA TEST%'

P4TIT: .ASCII '%%PRG4-SPEC BIN COUNT MAINT MODE DATA TEST%'

3399	016662	051455	042520	020103	
3400	016670	044502	020116	047503	
3401	016676	047125	020124	040515	
3402	016704	047111	020124	047515	
3403	016712	042504	042040	052101	
3404	016720	020101	042524	052123	
3405	016726	100			
3406	016727	045	040520	040522	PARMTS: .ASCII '%PARAMETERS = '
3407	016734	042515	042524	051522	
3408	016742	036440	040		
3409	016745	040	040040		APARM: .ASCII ' @'
3410	016750	051445	052105	052040	SELCAR: .ASCII '%SET TEST CHAR CODE IN SR7-SR0.@'
3411	016756	051505	020124	044103	
3412	016764	051101	041440	042117	
3413	016772	020105	047111	051440	
3414	017000	033522	051455	030122	
3415	017006	040056			
3416	017010	046045	040517	020104	LDLINE: .ASCII '%LOAD LINE NO. (8) INTO SR 3-7@'
3417	017016	044514	042516	047040	
3418	017024	027117	024040	024470	
3419	017032	044440	052116	020117	
3420	017040	051123	031440	033455	
3421	017046	100			
3422	017047	040	046040	047111	ALINE: .ASCII ' LINE NO.'
3423	017054	020105	047516	056	
3424	017061	040	020040	040527	SELINE: .ASCII ' WAS SELECTED@'
3425	017066	020123	042523	042514	
3426	017074	052103	042105	100	
3427	017101	000001			DEND: .END

AAA	003766	1190	1193#				
AAAA	006300	1700	1703#				
AAAB	006312	1704	1706#				
AAB	004000	1195#	1198				
AABA	012624	2601	2606#				
AABB	012650	2612#	2618	2621			
AABC	012660	2607	2614#				
AABD	012674	2615	2617#				
AABE	012700	2614	2619#				
AAE	004002	1193	1196#				
AASB	016412	751	3367#				
ABA	004020	1203	1206#				
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ABB	004032	1208#	1211				
ABBA	012716	2627	2630#				
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ABE	004034	1206	1209#				
ACA	004052	1217	1221#				
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ACAB	007542	1962	1974#				
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ACBA	012776	2649	2654#				
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ADAB	007576	1985	1987#				
ADB	004116	1237#	1240				
ADE	004120	1235	1238#				
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AEAB	007632	2002	2005#				
AEB	004152	1250	1253#				
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AFAB	007672	2020	2023#				
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AFBC	006366	1727	1730	1732#			
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AHAB	007772	2055	2058#						
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AHC	004472	1324	1327#						
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AIAS	010146	2073	2076	2080	2083	2090#			
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AJAA	010222	2107	2112#						
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AJAS	010310	2115	2118	2126#					
AJASA	010332	2132#	2136						
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AJAST	010374	2116	2119	2126*	2134*	2140*	2144#		
AJB	004656	1368	1371#						
AJBA	006656	1810	1815#						
AJBB	006674	1817	1820#						
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AJC	004700	1373	1376#						
AJD	004720	1370	1375	1378	1380#				
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AKAA	010406	2151	2156#						
AKAB	010554	2175	2178#						
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ALBC	007246	1906	1909#						
ALBD	007266	1901	1908	1911	1913#				
ALC	005022	1411	1414#						
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AMA	005064	1427	1430#					
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AMAB	010720	2226#	2227					
AMAC	010742	2230	2232#					
AMB	005076	1431	1433#					
AMBA	006542	1780	1785#					
AMBB	006600	1790	1793#					
AMBC	006614	1794	1797#					
AMBD	006642	1792	1796	1800	1802#			
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ANAA	010754	2239	2244#					
ANAB	011024	2252	2254#					
ANB	005132	1445	1448#					
ANBA	013050	2674#						
ANBB	013062	2671	2676#					
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ANBD	013132	2686#	2690					
ANBE	013166	2692	2696#					
ANBF	013172	2694	2698#					
ANBG	013212	2695	2697	2705#				
ANC	005150	1450	1453#					
AND	005170	1447	1452	1455	1457#			
ANW	005202	1462	1466#					
ANX	005216	1467	1470#					
ANY	005240	1472	1475#					
ANZ	005260	1469	1474	1477	1479#			
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AOAB	011112	2274	2276#					
AOBA	007070	1865	1869#					
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CROSS REFERENCE TABLE -- USER SYMBOLS

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ARBA	005526	1545	1550#					
ARBB	005540	1551	1553#					
ARC	005464	1530	1533#					
ARD	005504	1527	1532	1535	1537#			
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ARXSB	015520	1966	3287#					
ARXWAS	015535	1970	3290#					
ASA	005552	1559	1562#					
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ASAB	011774	2415	2418#					
ASAC	012006	2419	2423#					
ASAD	012020	2417	2422	2425	2428#			
ASAS	012026	2411	2412	2430#				
ASB	005574	1564	1567#					
ASC	005616	1569	1572#					
ASD	005636	1566	1571	1574	1576#			
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ATA	005660	1583	1586#					
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AT110	013402	2782	2791#					
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AT122	013616	2882	2891#					
AT123	013634	2892	2901#					

.MAIN. MACY11 30A(1052) 10-JUN-80 10:55 PAGE 69
 CZDCAD.P11 10-JUN-80 10:47

CROSS REFERENCE TABLE -- USER SYMBOLS

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AT67	012176	2460	2481#		
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RUN-TIME RATIO: 646/80=8.0
CORE USED: 32K (63 PAGES)