

TEST

TEST 3 UNARY & BINARY
MD-11-DOC-A

EP-DOC-A-DL-A
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digital
MADE IN U.S.A.

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IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DOAA TO DOLA-D
 PRODUCT NAME: FIRST LEVEL 1-12
 DATE CREATED: 17 MARCH 1970
 MAINTAINER: DIAGNOSTIC GROUP
 AUTHOR: JOHN MITTELL

THIS GROUP OF TESTS CONSIST OF:

PROCESSOR TEST		MAINDEC	
TEST	1	BRANCH	11-DCAA
	2	CON BRANCH	11-DOBA
	3	UNARY	11-DOCA
	4	UNARY AND BINARYS	11-DODA
	5	ROTATE/SHIFT	11-DOEA
	6	COMPARE	11-DOFA
	7	COMPARE NOT	11-DOGA
	8	MOVE	11-DOHA
	9	BIS,BIC AND BIT	11-DOIA
	10	ADD	11-DOJA
	11	SUBTRACT	11-DOKA
	12	JMP	11-DOLA

11-DCAA 11-DOBA 11-DOCA 11-DODA 11-DOEA 11-DOFA 11-DOGA 11-DOHA 11-DOIA 11-DOJA 11-DOKA 11-DOLA

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- 5. OPERATING PROCEDURE
 - 5.1 OPERATIONAL SWITCH SETTINGS
 - 5.1.1 NO SWITCHES ARE USED
 - 5.1.3
 - 5.2 SUBROUTINE ABSTRACTS
 - 5.2.1 BEGIN SA 200
 - 5.2.2 SCOPE
 -
 - IS A "NOP" THAT IS PLACED BETWEEN EACH SUBTEST IN THE INSTRUCTION SECTION. IF A SCOPE LOOP IS NEEDED, INSERT A BRANCH TO THE PREVIOUS SCOPE LOCATION AT THE CURRENT SCOPE LOCATION. (NOTE NOP=240)
 - 5.2.3 HLT
 -
 - INDICATES THE UNIQUE ADDRESS THAT TAGS THE FAILING SUBTEST. THE INCORRECT DATA AT THE TIME OF THE FAILURE MAY OR MAY NOT BE DISPLAYED IN REGISTER ZERO, WHICH IS THE DATA REGISTER ON A HALT.
 - 5.3 PROGRAM AND/OR OPERATOR ACTION
 - 5.3.1 LOADING AND STARTING AT 200 STARTS THE TEST. IF AN ERROR IS DETECTED, THERE WILL BE A HALT. WHEN A HALT OCCURS AND IT IS NECESSARY TO SCOPE ON IT, PLACE INSERT A BRANCH INSTRUCTION IN THE SCOPE LOCATION FOLLOWING THE HALT. THE BRANCH INSTRUCTION SHOULD BRANCH YOU TO THE PREVIOUS SCOPE LOCATION.
- 6. ERRORS
 - 6.1 ALL ERRORS WILL CAUSE A HALT.
 - 6.2 ERROR RECOVERY
 - ON TRAP ERRORS - RESTART AT 200.
 DEPRESS CONTINUE TO CONTINUE TEST
- 7. RESTRICTIONS
 - 7.1 STARTING RESTRICTION
 - NONE

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7.2 OPERATIONAL RESTRICTION
NONE

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8. MISCELLANEOUS

IF A HALT OCCURES IN THE TRAP OR INTERRUPT VECTOR AREA, REGISTER SIX SHOULD BE EXAMINED TO DETERMINE ITS CONTENTS, THEN USE REGISTER SIX CONTENTS AS AN ADDRESS TO DETERMINE THE LOCATION THE PROGRAM WAS AT, WHEN THE INTERRUPT OR TRAP OCCURRED. (MEMORY AS SPECIFIED BY R6 CONTAINS THE PC OF THE INSTRUCTION FOLLOWING THE INSTRUCTION WHERE THE TRAP OCCURED)

8.1 EXECUTION TIME

TIME BETWEEN BELLS

FOR TAPE 1	5	MINUTES
FOR TAPE 2	2.5	MINUTES
FOR TAPE 3	3	MINUTES
FOR TAPE 4	6	MINUTES
FOR TAPE 5	5	MINUTES
FOR TAPE 6	6	MINUTES
FOR TAPE 7	5	MINUTES
FOR TAPE 8	6	MINUTES
FOR TAPE 9	3	MINUTES
FOR TAPE 10	4	MINUTES
FOR TAPE 11	2	MINUTES
FOR TAPE 12	4	MINUTES

9. PROGRAM DESCRIPTION

- TEST 1 THIS IS A TEST OF THE UNCONDITIONAL BRANCH INSTRUCTION, IT PROVES THAT A LONG PROGRAM CAN BE LOADED AND THE INSTRUCTIONS CAN BE EXECUTED THROUGHOUT MEMORY.
- TEST 2 THIS IS A CONDITIONAL BRANCH TEST USING ALL OF THE CONDITIONAL BRANCH INSTRUCTIONS. IT TESTS THAT ALL COMBINATIONS OF CONDITION CODES ARE RESPONDED TO CORRECTLY. (THE CONDITION CODES ARE MANIPULATED WITH THE MICRO-PROGRAM OPERATIONS.)
- TEST 3 THIS IS A TEST OF THE UNARY INSTRUCTIONS AND THEIR EFFECTS UPON THE CONDITION CODES ONLY. MOSTLY REGISTER OPERATIONS.
- TEST 4 THIS IS A COMBINED USE OF UNARY AND BINARY INSTRUCTIONS TESTING THE RESULTS AND THE CONDITION CODES.
- TEST 5 THIS TEST ROTATE AND SHIFT INSTRUCTION, BOTH THE REGISTERS AND MEMORY LOCATIONS, WORD AND BYTE, ARE TESTED.
- TEST 6 THIS IS A TEST OF THE COMPARE INSTRUCTIONS FOR

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EQUALITY. ALL CONDITIONAL BRANCHES THAT WILL
BRANCH ON ANY FORM OF EQUALITY ARE ALSO TESTED.
BOTH WORD AND BYTE OPERATIONS ARE USED.

(9 CONT'D)

TEST 7 COMPARE NOT. THIS IS A TEST OF THE COMPARE INSTRUCTIONS WHERE NO VALUES ARE EQUAL. HERE BRANCHES FOR NOT EQUAL, GREATER THAN AND LESS THAN, ETC., ARE TESTED.

TEST 8 CHECKS THE MOVE INSTRUCTION BOTH TO MEMORY AND REGISTERS.

TEST 9 CHECK THE BIS, BIC AND BIT INSTRUCTION BOTH TO MEMORY AND TO REGISTERS.

TEST 10 TESTS THE ADD INSTRUCTION.

TEST 11 TESTS THE SUBTRACT INSTRUCTION.

TEST 12 TEST OF THE JUMP INSTRUCTION IN MOST MODES.

NOTE THAT STACK OPERATION AND INSTRUCTIONS THAT USE THEM ARE NOT TESTED IN THIS GROUP OF TEST.

- 10. LISTING
- 11. FLOW CHART(S)

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295          :START OF TEST
296 000200   BEGIN:
297
298          ;BASIC TEST FOR REGISTER %D
299
300          ;TEST "CLR"
301          SCOPE
302 000200   SCC
303 000204   CLR      %D          ;SHOULD SET Z
304 000206   BEQ     .+4         ;Z NOT SET
305 000210   HLT
306
307          ;TEST "COM"
308          SCOPE
309 000212   SCC
310 000214   CLR      %D          ;000000
311 000216   COM     %D          ;17777,N SHOULD BE SET
312 000220   BMI     .+4         ;"N" NOT SET
313 000222   HLT
314
315          ;TEST "INC"
316          SCOPE
317 000226   SCC
318 000230   CLR      %D          ;CLEAR
319 000232   COM     %D          ;COMPLIMENT
320 000234   INC     %D          ;ALL ONES TO ZERO, AT Z
321 000236   BEQ     .+4         ;BRANCH ON Z
322 000240   HLT          ;Z NOT SET
323
324          ;TEST "DEC"
325          SCOPE
326 000244   SCC
327 000246   CLR      %D          ;CLEAR
328 000250   DEC     %D          ;ZERO MINUS 1=17777
329 000252   BMI     .+4         ;N NOT SET
330 000254   HLT
331
332          ;TEST "NEG"
333          SCOPE
334 000260   SCC
335 000262   CLR      %D          ;000000
336 000264   NEG     %D          ;000000
337 000266   BEQ     .+4         ;Z NOT SET
338 000270   HLT          ;Z NOT SET
339
340          ;TEST "NEG"
341          SCOPE
342 000274   SCC
343 000276   CLR      %D          ;000000
344 000300   INC     %D          ;000001
345 000302   NEG     %D          ;177777
346 000304   BMI     .+4         ;N NOT SET
347 000306   HLT
348
349          ;TEST ADC
350          SCOPE
351 000312   CLR      %D          ;CARRY=1
352 000314   SEC
353 000316   ADC     %D          ;000000
354 000320   BNE     .+4         ;SET C
355 000322   HLT          ;000001
356 000324   HLT          ;Z NOT CLEARED

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351          ;TEST "ADC"
352          SCOPE
353          CCC
354          CLR          %0
355          ADC          %0
356          BEQ          .+4
357          HLT
          ;CARRY=0
          ;000000
          ;ADD-CARRY=000000
          ;Z NOT SET
          ;Z NOT SET

358          ;TEST "SBC"
359          SCOPE
360
361          CLR          %0
362          SEC
363          SBC          %0
364          BMI          .+4
365          HLT
          ;CARRY=1
          ;00000
          ;SET C
          ;000000-1=177777
          ;N NOT SET

366          ;TEST TST
367          SCOPE
368          CLR          %0
369          SCC
370          TST          %0
371          BPL          .+4
372          HLT
          ;000000
          ;SET CODES
          ;N=0,Z=1
          ;N WAS NOT CLEARED

373          SCOPE
374          ;BASIC TEST FOR REGISTER %0
375
376          ;TEST "CLRB"
377          SCOPE
378          SCC
379          CLRB          %0
380          BEQ          .+4
381          HLT
          ;SHOULD SET Z
          ;Z NOT SET

382          ;TEST "COMB"
383          SCOPE
384          SCC
385          CLRB          %0
386          COMB          %0
387          BMI          .+4
388          HLT
          ;000000
          ;17777 N SHOULD BE SET
          ;"N" NOT SET

389          ;TEST "INCB"
390          SCOPE
391          SCC
392          CLRB          %0
393          COMB          %0
394          INCB          %0
395          BEQ          .+4
396          HLT
          ;CLEAR
          ;COMPLIMENT
          ;ALL ONES TO ZERO, AT Z
          ;BRANCH ON Z
          ;Z NOT SET

397          ;TEST "DECB"
398          SCOPE
399          SCC
400          CLRB          %0
401          DECB          %0
402          BMI          .+4
403          HLT
          ;CLEAR
          ;ZERO MINUS 1=17777
          ;N NOT SET

404          ;TEST "NEGB"
405          SCOPE
406          SCC

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407 000460 105000          CLRB      %0          ;000000
408 000462 105400          NEGB      %0          ;:000000
409 000464 001401          BEQ       .+4         ;:Z NOT SET
410 000466 000000          HLT
411                          ;TEST "NEGB"
412 000470 000240          SCOPE
413 000472 000277          SCC
414 000474 105000          CLRB      %0          ;:000000
415 000476 105200          INCB      %0          ;:000001
416 000500 105400          NEGB      %0          ;:177777
417 000502 100401          BMI
418 000504 000000          HLT
419                          ;TEST ADCB
420 000506 000240          SCOPE
421                          ;CARRY=1
422 000510 105000          CLRB      %0          ;:000000
423 000512 000261          SEC
424 000514 105500          ADCB      %0          ;:SET C
425 000516 001001          BNE
426 000520 000000          HLT
427                          ;TEST "ADCB"
428 000522 000240          SCOPE
429 000524 000257          CCC
430 000526 105000          CLRB      %0          ;:CARRY=0
431 000530 105500          ADCB      %0          ;:000000
432 000532 001401          BEQ       .+4         ;:ADD-CARRY=000000
433 000534 000000          HLT
434                          ;TEST "SBCB"
435 000536 000240          SCOPE
436                          ;CARRY=1
437 000540 105000          CLRB      %0          ;:000000
438 000542 000261          SEC
439 000544 105600          SBCB      %0          ;:SET C
440 000546 100401          BMI
441 000550 000000          HLT
442                          ;TEST TSTB
443 000552 000240          SCOPE
444 000554 105000          CLRB      %0          ;:000000
445 000556 000277          SCC
446 000560 105700          TSTB      %0          ;:SET CODES
447 000562 100001          BPL
448 000564 000000          HLT
449 000566 000240          SCOPE
450
451                          ;BASIC TEST FOR REGISTER %1
452
453                          ;TEST "CLR"
454                          ;SCOPE
455 000570 000240          SCC
456 000572 000277          CLR
457 000574 005001          BEQ       %1
458 000576 001401          HLT
459 000600 000000          ;:SHOULD SET Z
460                          ;:Z NOT SET
461 000602 000240          ;TEST "COM"
462 000604 000277          SCOPE
          SCC

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463	000606	005001	CLR	%1	:000000
464	000610	005101	COM	%1	:17777 N SHOULD BE SET
465	000612	100401	BMI	.+4	: "N" NOT SET
466	000614	000000	HLT		
467			;TEST "INC"		
468	000616	000240	SCOPE		
469	000620	000277	SCC		
470	000622	005001	CLR	%1	:CLEAR
471	000624	005101	COM	%1	:COMPLIMENT
472	000626	005201	INC	%1	:ALL ONES TO ZERO, AT Z
473	000630	001401	BEQ	.+4	:BRANCH ON Z
474	000632	000000	HLT		:Z NOT SET
475			;TEST "DEC"		
476	000634	000240	SCOPE		
477	000636	000277	SCC		
478	000640	005001	CLR	%1	:CLEAR
479	000642	005301	DEC	%1	:ZERO MINUS 1=17777
480	000644	100401	BMI	.+4	
481	000646	000000	HLT		:N NOT SET
482			;TEST "NEG"		
483	000650	000240	SCOPE		
484	000652	000277	SCC		
485	000654	005001	CLR	%1	:000000
486	000656	005401	NEG	%1	:000000
487	000660	001401	BEQ	.+4	:Z NOT SET
488	000662	000000	HLT		:Z NOT SET
489			;TEST "NEG"		
490	000664	000240	SCOPE		
491	000666	000277	SCC		
492	000670	005001	CLR	%1	:000000
493	000672	005201	INC	%1	:000001
494	000674	005401	NEG	%1	:177777
495	000676	100401	BMI	.+4	
496	000700	000000	HLT		:N NOT SET
497			;TEST ADC		
498	000702	000240	SCOPE		
499					:CARRY=1
500	000704	005001	CLR	%1	:000000
501	000706	000261	SEC		:SET C
502	000710	005501	ADC	%1	:000001
503	000712	001001	BNE	.+4	
504	000714	000000	HLT		:Z NOT CLEARED
505			;TEST "ADC"		
506	000716	000240	SCOPE		
507	000720	000257	CCC		:CARRY=0
508	000722	005001	CLR	%1	:000000
509	000724	005501	ADC	%1	:ADD-CARRY=000000
510	000726	001401	BEQ	.+4	:Z NOT SET
511	000730	000000	HLT		:Z NOT SET
512			;TEST "SBC"		
513	000732	000240	SCOPE		
514					:CARRY=1
515	000734	005001	CLR	%1	:000000
516	000736	000261	SEC		:SET C
517	000740	005601	SBC	%1	:000000-1=177777
518	000742	100401	BMI	.+4	

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519 000744 000000          HLT          ;N NOT SET
520          ;TEST TST
521 000746 000240          SCOPE
522 000750 005001          CLR          %1          ;000000
523 000752 000277          SCC          ;SET CODES
524 000754 005701          TST          %1          ;N=0,Z=1
525 000756 100001          BPL          .+4          ;N WAS NOT CLEARED
526 000760 000000          HLT
527 000762 000240          SCOPE
          ;BASIC TEST FOR REGISTER %1
          ;TEST "CLRB"
          SCOPE
528 000764 000240          SCC
529 000766 000277          CLRB          %1          ;SHOULD SET Z
530 000770 105001          BEQ          .+4          ;Z NOT SET
531 000772 001401          HLT
          ;TEST "COMB"
          SCOPE
532 000776 000240          SCC
533 001000 000277          CLRB          %1          ;000000
534 001002 105001          COMB          %1          ;17777,N SHOULD BE SET
535 001004 105101          BMI          .+4          ;"N" NOT SET
536 001006 100401          HLT
          ;TEST "INCB"
          SCOPE
537 001012 000240          SCC
538 001014 000277          CLRB          %1          ;CLEAR
539 001016 105001          COMB          %1          ;COMPLIMENT
540 001020 105101          INCB          %1          ;ALL ONES TO ZERO, AT Z
541 001022 105201          BEQ          .+4          ;BRANCH ON Z
542 001024 001401          HLT          ;Z NOT SET
          ;TEST "DECB"
          SCOPE
543 001030 000240          SCC
544 001032 000277          CLRB          %1          ;CLEAR
545 001034 105001          DECB          %1          ;ZERO MINUS 1=17777
546 001036 105301          BMI          .+4          ;N NOT SET
547 001040 100401          HLT
          ;TEST "NEGB"
          SCOPE
548 001044 000240          SCC
549 001046 000277          CLRB          %1          ;000000
550 001050 105001          NEGB          %1          ;000000
551 001052 105401          BEQ          .+4          ;Z NOT SET
552 001054 001401          HLT          ;Z NOT SET
          ;TEST "NEGB"
          SCOPE
553 001060 000240          SCC
554 001062 000277          CLRB          %1          ;000000
555 001064 105001          INCB          %1          ;000001
556 001066 105201          NEGB          %1          ;177777
557 001070 105401          BMI          .+4          ;N NOT SET
558 001072 100401          HLT
          ;TEST ADCB
          SCOPE
559 001076 000240

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575                                     ;CARRY=1
576 001100 105001                     CLRB   %1      ;000000
577 001102 000261                     SEC    ;SET C
578 001104 105501                     ADCB   %1      ;000001
579 001106 001001                     BNE   .+4
580 001110 000000                     HLT
;TEST "ADCB"                          ;Z NOT CLEARED
581                                     SCOPE
582 001112 000240
583 001114 000257                     CCC
584 001116 105001                     CLRB   %1      ;CARRY=0
585 001120 105501                     ADCB   %1      ;000000
586 001122 001401                     BEQ   .+4      ;ADD-CARRY=000000
587 001124 000000                     HLT          ;Z NOT SET
588                                     ;Z NOT SET
589 001126 000240                     ;TEST "SBCB"
590                                     SCOPE
591 001130 105001                     CLRB   %1
592 001132 000261                     SEC
593 001134 105601                     SBCB   %1
594 001136 100401                     BMI   .+4
595 001140 000000                     HLT
;TEST TSTB                             ;N NOT SET
596                                     SCOPE
597 001142 000240
598 001144 105001                     CLRB   %1      ;000000
599 001146 000277                     SCC
600 001150 105701                     TSTB  %1      ;SET CODES
601 001152 100001                     BPL   .+4      ;N=0,Z=1
602 001154 000000                     HLT          ;N WAS NOT CLEARED
603 001156 000240                     SCOPE
604
605
606                                     ;BASIC TEST FOR REGISTER %2
607
608                                     ;TEST "CLR"
609 001160 000240                     SCOPE
610 001162 000277                     SCC
611 001164 005002                     CLR   %2
612 001166 001401                     BEQ   .+4      ;SHOULD SET Z
613 001170 000000                     HLT          ;Z NOT SET
614                                     ;TEST "COM"
615 001172 000240                     SCOPE
616 001174 000277                     SCC
617 001176 005002                     CLR   %2
618 001200 005102                     COM   %2
619 001202 100401                     BMI   .+4      ;000000
620 001204 000000                     HLT          ;17777,N SHOULD BE SET
621                                     ;"N" NOT SET
622                                     ;TEST "INC"
623 001206 000240                     SCOPE
624 001210 000277                     SCC
625 001212 005002                     CLR   %2
626 001214 005102                     COM   %2
627 001216 005202                     INC   %2
628 001220 001401                     BEQ   .+4
629 001222 000000                     HLT
;TEST "DEC"                             ;CLEAR
630 001224 000240                     SCOPE      ;COMPLIMENT
;ALL ONES TO ZERO, AT Z
;BRANCH ON Z
;Z NOT SET

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631	001226	000277	SCC		
632	001230	005002	CLR	%2	:CLEAR
633	001232	005302	DEC	%2	:ZERO MINUS 1=17777
634	001234	100401	BMI	.+4	
635	001236	000000	HLT		:N NOT SET
636			;TEST "NEG"		
637	001240	000240	SCOPE		
638	001242	000277	SCC		
639	001244	005002	CLR	%2	:000000
640	001246	005402	NEG	%2	:000000
641	001250	001401	BEG	.+4	:Z NOT SET
642	001252	000000	HLT		:Z NOT SET
643			;TEST "NEG"		
644	001254	000240	SCOPE		
645	001256	000277	SCC		
646	001260	005002	CLR	%2	:000000
647	001262	005202	INC	%2	:000001
648	001264	005402	NEG	%2	:177777
649	001266	100401	BMI	.+4	
650	001270	000000	HLT		:N NOT SET
651			;TEST ADC		
652	001272	000240	SCOPE		
653					:CARRY=1
654	001274	005002	CLR	%2	:000000
655	001276	000261	SEC		:SET C
656	001300	005502	ADC	%2	:000001
657	001302	001001	BNE	.+4	
658	001304	000000	HLT		:Z NOT CLEARED
659			;TEST "ADC"		
660	001306	000240	SCOPE		
661	001310	000257	CCC		:CARRY=0
662	001312	005002	CLR	%2	:000000
663	001314	005502	ADC	%2	:ADD-CARRY=000000
664	001316	001401	BEG	.+4	:Z NOT SET
665	001320	000000	HLT		:Z NOT SET
666			;TEST "SBC"		
667	001322	000240	SCOPE		
668					:CARRY=1
669	001324	005002	CLR	%2	:000000
670	001326	000261	SEC		:SET C
671	001330	005602	SBC	%2	:000000-1=177777
672	001332	100401	BMI	.+4	
673	001334	000000	HLT		:N NOT SET
674			;TEST TST		
675	001336	000240	SCOPE		
676	001340	005002	CLR	%2	:000000
677	001342	000277	SCC		:SET CODES
678	001344	005702	TST	%2	:N=0,Z=1
679	001346	100001	BPL	.+4	
680	001350	000000	HLT		:N WAS NOT CLEARED
681	001352	000240	SCOPE		
682			;BASIC TEST FOR REGISTER %2		
683					
684			;TEST "CLRB"		
685	001354	000240	SCOPE		
686	001356	000277	SCC		

687	001360	105002	CLRB	%2	: SHOULD SET Z
688	001362	001401	BEQ	.+4	: Z NOT SET
689	001364	000000	HLT		
690			; TEST "COMB"		
691	001366	000240	SCOPE		
692	001370	000277	SCC		
693	001372	105002	CLRB	%2	: 000000
694	001374	105102	COMB	%2	: 17777 N SHOULD BE SET
695	001376	100401	BMI	.+4	: "N" NOT SET
696	001400	000000	HLT		
697			; TEST "INCB"		
698	001402	000240	SCOPE		
699	001404	000277	SCC		
700	001406	105002	CLRB	%2	: CLEAR
701	001410	105102	COMB	%2	: COMPLIMENT
702	001412	105202	INCB	%2	: ALL ONES TO ZERO, AT Z
703	001414	001401	BEQ	.+4	: BRANCH ON Z
704	001416	000000	HLT		: Z NOT SET
705			; TEST "DECB"		
706	001420	000240	SCOPE		
707	001422	000277	SCC		
708	001424	105002	CLRB	%2	: CLEAR
709	001426	105302	DECB	%2	: ZERO MINUS 1=17777
710	001430	100401	BMI	.+4	
711	001432	000000	HLT		: N NOT SET
712			; TEST "NEGB"		
713	001434	000240	SCOPE		
714	001436	000277	SCC		
715	001440	105002	CLRB	%2	: 000000
716	001442	105402	NEGB	%2	: 000000
717	001444	001401	BEQ	.+4	: Z NOT SET
718	001446	000000	HLT		: Z NOT SET
719			; TEST "NEGB"		
720	001450	000240	SCOPE		
721	001452	000277	SCC		
722	001454	105002	CLRB	%2	: 000000
723	001456	105202	INCB	%2	: 000001
724	001460	105402	NEGB	%2	: 177777
725	001462	100401	BMI	.+4	
726	001464	000000	HLT		: N NOT SET
727			; TEST ADCB		
728	001466	000240	SCOPE		
729					: CARRY=1
730	001470	105002	CLRB	%2	: 000000
731	001472	000261	SEC		: SET C
732	001474	105502	ADCB	%2	: 000001
733	001476	001001	BNE	.+4	
734	001500	000000	HLT		: Z NOT CLEARED
735			; TEST "ADCB"		
736	001502	000240	SCOPE		
737	001504	000257	CCC		: CARRY=0
738	001506	105002	CLRB	%2	: 000001
739	001510	105502	ADCB	%2	: ADD-CARRY=000000
740	001512	001401	BEQ	.+4	: Z NOT SET
741	001514	000000	HLT		: Z NOT SET
742			; TEST "SBCB"		

743	001516	000240	SCOPE		
744					:CARRY=1
745	001520	105002	CLRB	%2	:00000
746	001522	000261	SEC		:SET C
747	001524	105602	SBCB	%2	:000000-1=177777
748	001526	100401	BMI	.+4	
749	001530	000000	HLT		:N NOT SET
750			;TEST TSTB		
751	001532	000240	SCOPE		
752	001534	105002	CLRB	%2	:000000
753	001536	000277	SCC		:SET CODES
754	001540	105702	TSTB	%2	:N=0,Z=1
755	001542	100001	BPL	.+4	
756	001544	000000	HLT		:N WAS NOT CLEARED
757	001546	000240	SCOPE		
758					
759					
760			;BASIC TEST FOR REGISTER %3		
761			;TEST "CLR"		
762			SCOPE		
763	001550	000240	SCC		
764	001552	000277	CLR	%3	:SHOULD SET Z
765	001554	005003	BEQ	.+4	:Z NOT SET
766	001556	001401	HLT		
767	001560	000000	HLT		
768			;TEST "COM"		
769	001562	000240	SCOPE		
770	001564	000277	SCC		
771	001566	005003	CLR	%3	:000000
772	001570	005103	COM	%3	:17777,N SHOULD BE SET
773	001572	100401	BMI	.+4	: "N" NOT SET
774	001574	000000	HLT		
775			;TEST "INC"		
776	001576	000240	SCOPE		
777	001600	000277	SCC		
778	001602	005003	CLR	%3	:CLEAR
779	001604	005103	COM	%3	:COMPLIMENT
780	001606	005203	INC	%3	:ALL ONES TO ZERO, AT Z
781	001610	001401	BEQ	.+4	:BRANCH ON Z
782	001612	000000	HLT		:Z NOT SET
783			;TEST "DEC"		
784	001614	000240	SCOPE		
785	001616	000277	SCC		
786	001620	005003	CLR	%3	:CLEAR
787	001622	005303	DEC	%3	:ZERO MINUS 1=17777
788	001624	100401	BMI	.+4	
789	001626	000000	HLT		:N NOT SET
790			;TEST "NEG"		
791	001630	000240	SCOPE		
792	001632	000277	SCC		
793	001634	005003	CLR	%3	:000000
794	001636	005403	NEG	%3	:000000
795	001640	001401	BEQ	.+4	:Z NOT SET
796	001642	000000	HLT		:Z NOT SET
797			;TEST "NEG"		
798	001644	000240	SCOPE		

```

799 001646 000277          SCC
800 001650 005003          CLR          %3          ;000000
801 001652 005203          INC          %3          ;000001
802 001654 005403          NEG          %3          ;177777
803 001656 100401          BMI          .+4
804 001660 000000          HLT
805          ;TEST ADC
806 001662 000240          SCOPE
807          ;CARRY=1
808 001664 005003          CLR          %3          ;000000
809 001666 000261          SEC          ;SET C
810 001670 005503          ADC          %3          ;000001
811 001672 001001          BNE          .+4
812 001674 000000          HLT
813          ;TEST "ADC"
814 001676 000240          SCOPE
815 001700 000257          CCC
816 001702 005003          CLR          %3          ;CARRY=0
817 001704 005503          ADC          %3          ;000000
818 001706 001401          BEQ          .+4          ;ADD-CARRY=000000
819 001710 000000          HLT
820          ;TEST "SBC"
821 001712 000240          SCOPE
822          ;CARRY=1
823 001714 005003          CLR          %3          ;000000
824 001716 000261          SEC          ;SET C
825 001720 005603          SBC          %3          ;000000-1=177777
826 001722 100401          BMI          .+4
827 001724 000000          HLT
828          ;TEST TST
829 001726 000240          SCOPE
830 001730 005003          CLR          %3          ;000000
831 001732 000277          SCC          ;SET CODES
832 001734 005703          TST          %3          ;N=0,Z=1
833 001736 100001          BPL          .+4
834 001740 000000          HLT
835 001742 000240          SCOPE
836          ;BASIC TEST FOR REGISTER %3
837          ;TEST "CLRB"
838          ;CARRY=1
839 001744 000240          SCOPE
840 001746 000277          SCC
841 001750 105003          CLRB          %3          ;SHOULD SET Z
842 001752 001401          BEQ          .+4          ;Z NOT SET
843 001754 000000          HLT
844          ;TEST "COMB"
845 001756 000240          SCOPE
846 001760 000277          SCC
847 001762 105003          CLRB          %3          ;000000
848 001764 105103          COMB          %3          ;17777.N SHOULD BE SET
849 001766 100401          BMI          .+4          ;"N" NOT SET
850 001770 000000          HLT
851          ;TEST "INCB"
852 001772 000240          SCOPE
853 001774 000277          SCC
854 001776 105003          CLRB          %3          ;CLEAR

```

855	002000	105103	COMB	%3	:COMPLIMENT
856	002002	105203	INCB	%3	:ALL ONES TO ZERO, AT Z
857	002004	001401	BEQ	+.4	:BRANCH ON Z
858	002006	000000	HLT		:Z NOT SET
859			;TEST "DECB"		
860	002010	000240	SCOPE		
861	002012	000277	SCC		
862	002014	105003	CLRB	%3	:CLEAR
863	002016	105303	DECB	%3	:ZERO MINUS 1=17777
864	002020	100401	BMI	+.4	
865	002022	000000	HLT		:N NOT SET
866			;TEST "NEGB"		
867	002024	000240	SCOPE		
868	002026	000277	SCC		
869	002030	105003	CLRB	%3	:000000
870	002032	105403	NEGB	%3	:000000
871	002034	001401	BEQ	+.4	:Z NOT SET
872	002036	000000	HLT		:Z NOT SET
873			;TEST "NEGB"		
874	002040	000240	SCOPE		
875	002042	000277	SCC		
876	002044	105003	CLRB	%3	:000000
877	002046	105203	INCB	%3	:000001
878	002050	105403	NEGB	%3	:177777
879	002052	100401	BMI	+.4	
880	002054	000000	HLT		:N NOT SET
881			;TEST ADCB		
882	002056	000240	SCOPE		
883					:CARRY=1
884	002060	105003	CLRB	%3	:000000
885	002062	000261	SEC		:SET C
886	002064	105503	ADCB	%3	:000001
887	002066	001001	BNE	+.4	
888	002070	000000	HLT		:Z NOT CLEARED
889			;TEST "ADCB"		
890	002072	000240	SCOPE		
891	002074	000257	CCC		:CARRY=0
892	002076	105003	CLRB	%3	:000000
893	002100	105503	ADCB	%3	:ADD-CARRY=000000
894	002102	001401	BEQ	+.4	:Z NOT SET
895	002104	000000	HLT		:Z NOT SET
896			;TEST "SBCB"		
897	002106	000240	SCOPE		
898					:CARRY=1
899	002110	105003	CLRB	%3	:000000
900	002112	000261	SEC		:SET C
901	002114	105603	SBCB	%3	:000000-1=177777
902	002116	100401	BMI	+.4	
903	002120	000000	HLT		:N NOT SET
904			;TEST TSTB		
905	002122	000240	SCOPE		
906	002124	105003	CLRB	%3	:000000
907	002126	000277	SCC		:SET CODES
908	002130	105703	TSTB	%3	:N=0,Z=1
909	002132	100001	BPL	+.4	
910	002134	000000	HLT		:N WAS NOT CLEARED

```

911 002136 000240          SCOPE
912
913
914
915          ;BASIC TEST FOR REGISTER %4
916
917          ;TEST "CLR"
918          SCOPE
919          SCC
920          CLR          %4          ;SHOULD SET Z
921          BEQ          .+4          ;Z NOT SET
922          HLT
923
924          ;TEST "COM"
925          SCOPE
926          SCC
927          CLR          %4          ;000000
928          COM          %4          ;17777 N SHOULD BE SET
929          BMI          .+4          ;"N" NOT SET
930          HLT
931
932          ;TEST "INC"
933          SCOPE
934          SCC
935          CLR          %4          ;CLEAR
936          COM          %4          ;COMPLIMENT
937          INC          %4          ;ALL ONES TO ZERO, AT Z
938          BEQ          .+4          ;BRANCH ON Z
939          HLT
940          ;Z NOT SET
941
942          ;TEST "DEC"
943          SCOPE
944          SCC
945          CLR          %4          ;CLEAR
946          DEC          %4          ;ZERO MINUS 1=17777
947          BMI          .+4
948          HLT
949          ;N NOT SET
950
951          ;TEST "NEG"
952          SCOPE
953          SCC
954          CLR          %4          ;000000
955          NEG          %4          ;000000
956          BEQ          .+4          ;Z NOT SET
957          HLT
958          ;Z NOT SET
959
960          ;TEST "NEG"
961          SCOPE
962          SCC
963          CLR          %4          ;000000
964          INC          %4          ;000001
965          NEG          %4          ;177777
966          BMI          .+4
967          HLT
968          ;N NOT SET
969
970          ;TEST ADC
971          SCOPE
972
973          CLR          %4          ;CARRY=1
974          SEC          %4          ;000000
975          ADC          %4          ;SET C
976          BNE          .+4          ;000001
977          HLT
978          ;Z NOT CLEARED

```

```

967
968 002266 000240
969 002270 000257
970 002272 005004
971 002274 005504
972 002276 001401
973 002300 000000
974
975 002302 000240
976
977 002304 005004
978 002306 000261
979 002310 005604
980 002312 100401
981 002314 000000
982
983 002316 000240
984 002320 005004
985 002322 000277
986 002324 005704
987 002326 100001
988 002330 000000
989 002332 000240
990
991
992
993 002334 000240
994 002336 000277
995 002340 105004
996 002342 001401
997 002344 000000
998
999 002346 000240
1000 002350 000277
1001 002352 105004
1002 002354 105104
1003 002356 100401
1004 002360 000000
1005
1006 002362 000240
1007 002364 000277
1008 002366 105004
1009 002370 105104
1010 002372 105204
1011 002374 001401
1012 002376 000000
1013
1014 002400 000240
1015 002402 000277
1016 002404 105004
1017 002406 105304
1018 002410 100401
1019 002412 000000
1020
1021 002414 000240
1022 002416 000277

;TEST "ADC"
SCOPE
CCC
CLR %4
ADC %4
BEQ .+4
HLT
;TEST "SBC"
SCOPE
CLR %4
SEC %4
SBC %4
BMI .+4
HLT
;TEST TST
SCOPE
CLR %4
SCC
TST %4
BPL .+4
HLT
SCOPE
;BASIC TEST FOR REGISTER %4
;TEST "CLRB"
SCOPE
SCC
CLRB %4
BEQ .+4
HLT
;TEST "COMB"
SCOPE
SCC
CLRB %4
COMB %4
BMI .+4
HLT
;TEST "INCB"
SCOPE
SCC
CLRB %4
COMB %4
INCB %4
BEQ .+4
HLT
;TEST "DECB"
SCOPE
SCC
CLRB %4
DECB %4
BMI .+4
HLT
;TEST "NEGB"
SCOPE
SCC

```

```

;CARRY=0
;000000
;ADD-CARRY=000000
;Z NOT SET
;Z NOT SET

;CARRY=1
;00000
;SET C
;000000-1=177777

;N NOT SET

;000000
;SET CODES
;N=0,Z=1
;N WAS NOT CLEARED

;SHOULD SET Z
;Z NOT SET

;000000
;17777,N SHOULD BE SET
;N NOT SET

;CLEAR
;COMPLIMENT
;ALL ONES TO ZERO, AT Z
;BRANCH ON Z
;Z NOT SET

;CLEAR
;ZERO MINUS 1=17777

;N NOT SET

```

K02

1023	002420	105004	CLRB	%4	:000000
1024	002422	105404	NEGB	%4	:000000
1025	002424	001401	BEQ	.+4	:Z NOT SET
1026	002426	000000	HLT		:Z NOT SET
1027			;TEST "NEGB"		
1028	002430	000240	SCOPE		
1029	002432	000277	SCC		
1030	002434	105004	CLRB	%4	:000000
1031	002436	105204	INCB	%4	:000001
1032	002440	105404	NEGB	%4	:177777
1033	002442	100401	BMI	.+4	
1034	002444	000000	HLT		:N NOT SET
1035			;TEST ADCB		
1036	002446	000240	SCOPE		
1037					:CARRY=1
1038	002450	105004	CLRB	%4	:000000
1039	002452	000261	SEC		:SET C
1040	002454	105504	ADCB	%4	:000001
1041	002456	001001	BNE	.+4	
1042	002460	000000	HLT		:Z NOT CLEARED
1043			;TEST "ADCB"		
1044	002462	000240	SCOPE		
1045	002464	000257	CCC		:CARRY=0
1046	002466	105004	CLRB	%4	:000000
1047	002470	105504	ADCB	%4	:ADD-CARRY=000000
1048	002472	001401	BEQ	.+4	:Z NOT SET
1049	002474	000000	HLT		:Z NOT SET
1050			;TEST "SBCB"		
1051	002476	000240	SCOPE		
1052					:CARRY=1
1053	002500	105004	CLRB	%4	:000000
1054	002502	000261	SEC		:SET C
1055	002504	105604	SBCB	%4	:000000-1=177777
1056	002506	100401	BMI	.+4	
1057	002510	000000	HLT		:N NOT SET
1058			;TEST TSTB		
1059	002512	000240	SCOPE		
1060	002514	105004	CLRB	%4	:000000
1061	002516	000277	SCC		:SET CODES
1062	002520	105704	TSTB	%4	:N=0,Z=1
1063	002522	100001	BPL	.+4	
1064	002524	000000	HLT		:N WAS NOT CLEARED
1065	002526	000240	SCOPE		
1066					
1067					
1068			;BASIC TEST FOR REGISTER %5		
1069			;TEST "CLR"		
1070			SCOPE		
1071	002530	000240	SCC		
1072	002532	000277	CLR	%5	:SHOULD SET Z
1073	002534	005005	BEQ	.+4	:Z NOT SET
1074	002536	001401	HLT		
1075	002540	000000	;TEST "COM"		
1076			SCOPE		
1077	002542	000240	SCC		
1078	002544	000277			

1079	002546	005005	CLR	%5	:000000
1080	002550	005105	COM	%5	:17777,N SHOULD BE SET
1081	002552	100401	BMI	.+4	: "N" NOT SET
1082	002554	000000	HLT		
1083			;TEST "INC"		
1084	002556	000240	SCOPE		
1085	002560	000277	SCC		
1086	002562	005005	CLR	%5	:CLEAR
1087	002564	005105	COM	%5	:COMPLIMENT
1088	002566	005205	INC	%5	:ALL ONES TO ZERO, AT Z
1089	002570	001401	BEQ	.+4	:BRANCH ON Z
1090	002572	000000	HLT		:Z NOT SET
1091			;TEST "DEC"		
1092	002574	000240	SCOPE		
1093	002576	000277	SCC		
1094	002600	005005	CLR	%5	:CLEAR
1095	002602	005305	DEC	%5	:ZERO MINUS 1=17777
1096	002604	100401	BMI	.+4	
1097	002606	000000	HLT		:N NOT SET
1098			;TEST "NEG"		
1099	002610	000240	SCOPE		
1100	002612	000277	SCC		
1101	002614	005005	CLR	%5	:000000
1102	002616	005405	NEG	%5	:000000
1103	002620	001401	BEQ	.+4	:Z NOT SET
1104	002622	000000	HLT		:Z NOT SET
1105			;TEST "NEG"		
1106	002624	000240	SCOPE		
1107	002626	000277	SCC		
1108	002630	005005	CLR	%5	:000000
1109	002632	005205	INC	%5	:000001
1110	002634	005405	NEG	%5	:177777
1111	002636	100401	BMI	.+4	
1112	002640	000000	HLT		:N NOT SET
1113			;TEST ADC		
1114	002642	000240	SCOPE		
1115					:CARRY=1
1116	002644	005005	CLR	%5	:000000
1117	002646	000261	SEC		:SET C
1118	002650	005505	ADC	%5	:000001
1119	002652	001001	BNE	.+4	
1120	002654	000000	HLT		:Z NOT CLEARED
1121			;TEST "ADC"		
1122	002656	000240	SCOPE		
1123	002660	000257	CCC		:CARRY=0
1124	002662	005005	CLR	%5	:000000
1125	002664	005505	ADC	%5	:ADD-CARRY=000000
1126	002666	001401	BEQ	.+4	:Z NOT SET
1127	002670	000000	HLT		:Z NOT SET
1128			;TEST "SBC"		
1129	002672	000240	SCOPE		
1130					:CARRY=1
1131	002674	005005	CLR	%5	:000000
1132	002676	000261	SEC		:SET C
1133	002700	005605	SBC	%5	:000000-1=177777
1134	002702	100401	BMI	.+4	

1135	002704	000000			
1136					
1137	002706	000240			
1138	002710	005005			
1139	002712	000277			
1140	002714	005705			
1141	002716	100001			
1142	002720	000000			
1143	002722	000240			
1144					
1145					
1146					
1147	002724	000240			
1148	002726	000277			
1149	002730	105005			
1150	002732	001401			
1151	002734	000000			
1152					
1153	002736	000240			
1154	002740	000277			
1155	002742	105005			
1156	002744	105105			
1157	002746	100401			
1158	002750	000000			
1159					
1160	002752	000240			
1161	002754	000277			
1162	002756	105005			
1163	002760	105105			
1164	002762	105205			
1165	002764	001401			
1166	002766	000000			
1167					
1168	002770	000240			
1169	002772	000277			
1170	002774	105005			
1171	002776	105305			
1172	003000	100401			
1173	003002	000000			
1174					
1175	003004	000240			
1176	003006	000277			
1177	003010	105005			
1178	003012	105405			
1179	003014	001401			
1180	003016	000000			
1181					
1182	003020	000240			
1183	003022	000277			
1184	003024	105005			
1185	003026	105205			
1186	003030	105405			
1187	003032	100401			
1188	003034	000000			
1189					
1190	003036	000240			

			HLT		;N NOT SET
			;TEST TST		
			SCOPE		
			CLR %5		;000000
			SCC		;SET CODES
			TST %5		;N=0,Z=1
			BPL .+4		
			HLT		;N WAS NOT CLEARED
			SCOPE		
			;BASIC TEST FOR REGISTER %5		
			;TEST "CLRB"		
			SCOPE		
			SCC		
			CLRB %5		;SHOULD SET Z
			BEG .+4		;Z NOT SET
			HLT		
			;TEST "COMB"		
			SCOPE		
			SCC		
			CLRB %5		;000000
			COMB %5		;17777,N SHOULD BE SET
			BMI .+4		; "N" NOT SET
			HLT		
			;TEST "INCB"		
			SCOPE		
			SCC		
			CLRB %5		;CLEAR
			COMB %5		;COMPLIMENT
			INCB %5		;ALL ONES TO ZERO, AT Z
			BEG .+4		;BRANCH ON Z
			HLT		;Z NOT SET
			;TEST "DECB"		
			SCOPE		
			SCC		
			CLRB %5		;CLEAR
			DECB %5		;ZERO MINUS 1=17777
			BMI .+4		
			HLT		;N NOT SET
			;TEST "NEGB"		
			SCOPE		
			SCC		
			CLRB %5		;000000
			NEGB %5		;000000
			BEG .+4		;Z NOT SET
			HLT		;Z NOT SET
			;TEST "NEGB"		
			SCOPE		
			SCC		
			CLRB %5		;000000
			INCB %5		;000001
			NEGB %5		;177777
			BMI .+4		
			HLT		;N NOT SET
			;TEST ADCB		
			SCOPE		

1191									
1192	003040	105005		CLRB	%5			:CARRY=1	
1193	003042	000261		SEC				:000000	
1194	003044	105505		ADCB	%5			:SET C	
1195	003046	001001		BNE	.+4			:000001	
1196	003050	000000		HLT				:Z NOT CLEARED	
1197			;TEST "ADCB"						
1198	003052	000240		SCOPE					
1199	003054	000257		CCC				:CARRY=0	
1200	003056	105005		CLRB	%5			:000000	
1201	003060	105505		ADCB	%5			:ADD-CARRY=000000	
1202	003062	001401		BEQ	.+4			:Z NOT SET	
1203	003064	000000		HLT				:Z NOT SET	
1204			;TEST "SBCB"						
1205	003066	000240		SCOPE					
1206								:CARRY=1	
1207	003070	105005		CLRB	%5			:000000	
1208	003072	000261		SEC				:SET C	
1209	003074	105605		SBCB	%5			:000000-1=177777	
1210	003076	100401		BMI	.+4				
1211	003100	000000		HLT				:N NOT SET	
1212			;TEST TSTB						
1213	003102	000240		SCOPE					
1214	003104	105005		CLRB	%5			:000000	
1215	003106	000277		SCC				:SET CODES	
1216	003110	105705		TSTB	%5			:N=0,Z=1	
1217	003112	100001		BPL	.+4				
1218	003114	000000		HLT				:N WAS NOT CLEARED	
1219	003116	000240		SCOPE					
1220									
1221									
1222			;BASIC TEST FOR REGISTER %6						
1223			;TEST "CLR"						
1224				SCOPE					
1225	003120	000240		SCC					
1226	003122	000277		CLR	%6			:SHOULD SET Z	
1227	003124	005006		BEQ	.+4			:Z NOT SET	
1228	003126	001401		HLT					
1229	003130	000000							
1230			;TEST "COM"						
1231	003132	000240		SCOPE					
1232	003134	000277		SCC					
1233	003136	005006		CLR	%6			:000000	
1234	003140	005106		COM	%6			:17777 N SHOULD BE SET	
1235	003142	100401		BMI	.+4			: "N" NOT SET	
1236	003144	000000		HLT					
1237			;TEST "INC"						
1238	003146	000240		SCOPE					
1239	003150	000277		SCC					
1240	003152	005006		CLR	%6			:CLEAR	
1241	003154	005106		COM	%6			:COMPLIMENT	
1242	003156	005206		INC	%6			:ALL ONES TO ZERO, AT Z	
1243	003160	001401		BEQ	.+4			:BRANCH ON Z	
1244	003162	000000		HLT				:Z NOT SET	
1245			;TEST "DEC"						
1246	003164	000240		SCOPE					

1247	003166	000277	SCC		
1248	003170	005006	CLR	%6	; CLEAR
1249	003172	005306	DEC	%6	; ZERO MINUS 1=17777
1250	003174	100401	BMI	.+4	
1251	003176	000000	HLT		; N NOT SET
1252			; TEST "NEG"		
1253	003200	000240	SCOPE		
1254	003202	000277	SCC		
1255	003204	005006	CLR	%6	; 000000
1256	003206	005406	NEG	%6	; 000000
1257	003210	001401	BEQ	.+4	; Z NOT SET
1258	003212	000000	HLT		; Z NOT SET
1259			; TEST "NEG"		
1260	003214	000240	SCOPE		
1261	003216	000277	SCC		
1262	003220	005006	CLR	%6	; 000000
1263	003222	005206	INC	%6	; 000001
1264	003224	005406	NEG	%6	; 177777
1265	003226	100401	BMI	.+4	
1266	003230	000000	HLT		; N NOT SET
1267			; TEST ADC		
1268	003232	000240	SCOPE		
1269			CLR	%6	; CARRY=1
1270	003234	005006	SEC	%6	; 000000
1271	003236	000261	ADC	%6	; SET C
1272	003240	005506	BNE	.+4	; 000001
1273	003242	001001	HLT		; Z NOT CLEARED
1274	003244	000000	; TEST "ADC"		
1275			SCOPE		
1276	003246	000240	CCC		; CARRY=0
1277	003250	000257	CLR	%6	; 000000
1278	003252	005006	ADC	%6	; ADD-CARRY=000000
1279	003254	005506	BEQ	.+4	; Z NOT SET
1280	003256	001401	HLT		; Z NOT SET
1281	003260	000000	; TEST "SBC"		
1282			SCOPE		
1283	003262	000240	CLR	%6	; CARRY=1
1284			SEC	%6	; 000000
1285	003264	005006	SBC	%6	; SET C
1286	003266	000261	BMI	.+4	; 000000-1=177777
1287	003270	005606	HLT		; N NOT SET
1288	003272	100401	; TEST TST		
1289	003274	000000	SCOPE		
1290			CLR	%6	; 000000
1291	003276	000240	SCC		; SET CODES
1292	003300	005006	TST	%6	; N=0, Z=1
1293	003302	000277	BPL	.+4	
1294	003304	005706	HLT		; N WAS NOT CLEARED
1295	003306	100001	SCOPE		
1296	003310	000000	; BASIC TEST FOR REGISTER %6		
1297	003312	000240	; TEST "CLRB"		
1298			SCOPE		
1299			SCC		
1300					
1301	003314	000240			
1302	003316	000277			

1303	003320	105006	CLRB	%6	: SHOULD SET Z
1304	003322	001401	BEQ	.+4	: Z NOT SET
1305	003324	000000	HLT		
1306			; TEST "COMB"		
1307	003326	000240	SCOPE		
1308	003330	000277	SCC		
1309	003332	105006	CLRB	%6	: 000000
1310	003334	105106	COMB	%6	: 17777, N SHOULD BE SET
1311	003336	100401	BMI	.+4	: "N" NOT SET
1312	003340	000000	HLT		
1313			; TEST "INCB"		
1314	003342	000240	SCOPE		
1315	003344	000277	SCC		
1316	003346	105006	CLRB	%6	: CLEAR
1317	003350	105106	COMB	%6	: COMPLIMENT
1318	003352	105206	INCB	%6	: ALL ONES TO ZERO, AT Z
1319	003354	001401	BEQ	.+4	: BRANCH ON Z
1320	003356	000000	HLT		: Z NOT SET
1321			; TEST "DECB"		
1322	003360	000240	SCOPE		
1323	003362	000277	SCC		
1324	003364	105006	CLRB	%6	: CLEAR
1325	003366	105306	DECB	%6	: ZERO MINUS 1=17777
1326	003370	100401	BMI	.+4	
1327	003372	000000	HLT		: N NOT SET
1328			; TEST "NEGB"		
1329	003374	000240	SCOPE		
1330	003376	000277	SCC		
1331	003400	105006	CLRB	%6	: 000000
1332	003402	105406	NEGB	%6	: 000000
1333	003404	001401	BEQ	.+4	: Z NOT SET
1334	003406	000000	HLT		: Z NOT SET
1335			; TEST "NEGB"		
1336	003410	000240	SCOPE		
1337	003412	000277	SCC		
1338	003414	105006	CLRB	%6	: 000000
1339	003416	105206	INCB	%6	: 000001
1340	003420	105406	NEGB	%6	: 177777
1341	003422	100401	BMI	.+4	
1342	003424	000000	HLT		: N NOT SET
1343			; TEST ADCB		
1344	003426	000240	SCOPE		
1345					: CARRY=1
1346	003430	105006	CLRB	%6	: 000000
1347	003432	000261	SEC		: SET C
1348	003434	105506	ADCB	%6	: 000001
1349	003436	001001	BNE	.+4	
1350	003440	000000	HLT		: Z NOT CLEARED
1351			; TEST "ADCB"		
1352	003442	000240	SCOPE		
1353	003444	000257	CCC		: CARRY=0
1354	003446	105006	CLRB	%6	: 000000
1355	003450	105506	ADCB	%6	: ADD-CARRY=000000
1356	003452	001401	BEQ	.+4	: Z NOT SET
1357	003454	000000	HLT		: Z NOT SET
1358			; TEST "SBCB"		

1359	003456	000240		SCOPE		
1360						:CARRY=1
1361	003460	105006		CLRB	%6	:00000
1362	003462	000261		SEC		:SET C
1363	003464	105606		SBCB	%6	:000000-1=177777
1364	003466	100401		BMI	.+4	
1365	003470	000000		HLT		:N NOT SET
1366				;TEST TSTB		
1367	003472	000240		SCOPE		
1368	003474	105006		CLRB	%6	:000000
1369	003476	000277		SCC		:SET CODES
1370	003500	105706		TSTB	%6	:N=0,Z=1
1371	003502	100001		BPL	.+4	
1372	003504	000000		HLT		:N WAS NOT CLEARED
1373	003506	000240		SCOPE		
1374						
1375						
1376				;BASIC TEST FOR REGISTER TEMP		
1377				;TEST "CLR"		
1378				SCOPE		
1379	003510	000240		SCC		
1380	003512	000277		CLR	TEMP	:SHOULD SET Z
1381	003514	005067	002024	BEQ	.+4	:Z NOT SET
1382	003520	001401		HLT		
1383	003522	000000		;TEST "COM"		
1384				SCOPE		
1385	003524	000240		SCC		
1386	003526	000277		CLR	TEMP	:000000
1387	003530	005067	002010	COM	TEMP	:17777,N SHOULD BE SET
1388	003534	005167	002004	BMI	.+4	:N NOT SET
1389	003540	100401		HLT		
1390	003542	000000		;TEST "INC"		
1391				SCOPE		
1392	003544	000240		SCC		
1393	003546	000277		CLR	TEMP	:CLEAR
1394	003550	005067	001770	COM	TEMP	:COMPLIMENT
1395	003554	005167	001764	INC	TEMP	:ALL ONES TO ZERO, AT Z
1396	003560	005267	001760	BEQ	.+4	:BRANCH ON Z
1397	003564	001401		HLT		:Z NOT SET
1398	003566	000000		;TEST "DEC"		
1399				SCOPE		
1400	003570	000240		SCC		
1401	003572	000277		CLR	TEMP	:CLEAR
1402	003574	005067	001744	DEC	TEMP	:ZERO MINUS 1=17777
1403	003600	005367	001740	BMI	.+4	
1404	003604	100401		HLT		:N NOT SET
1405	003606	000000		;TEST "NEG"		
1406				SCOPE		
1407	003610	000240		SCC		
1408	003612	000277		CLR	TEMP	:000000
1409	003614	005067	001724	NEG	TEMP	:000000
1410	003620	005467	001720	BEQ	.+4	:Z NOT SET
1411	003624	001401		HLT		:Z NOT SET
1412	003626	000000		;TEST "NEG"		
1413				SCOPE		
1414	003630	000240				

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1415	003632	000277		SCC		
1416	003634	005067	001704	CLR	TEMP	;000000
1417	003640	005267	001700	INC	TEMP	;000001
1418	003644	005467	001674	NEG	TEMP	;177777
1419	003650	100401		BMI	.+4	
1420	003652	000000		HLT		;N NOT SET
1421				;TEST ADC		
1422	003654	000240		SCOPE		
1423						;CARRY=1
1424	003656	005067	001662	CLR	TEMP	;000000
1425	003662	000261		SEC		;SET C
1426	003664	005567	001654	ADC	TEMP	;000001
1427	003670	001001		BNE	.+4	
1428	003672	000000		HLT		;Z NOT CLEARED
1429				;TEST "ADC"		
1430	003674	000240		SCOPE		
1431	003676	000257		CCC		;CARRY=0
1432	003700	005067	001640	CLR	TEMP	;000000
1433	003704	005567	001634	ADC	TEMP	;ADD-CARRY=000000
1434	003710	001401		BEQ	.+4	;Z NOT SET
1435	003712	000000		HLT		;Z NOT SET
1436				;TEST "SBC"		
1437	003714	000240		SCOPE		
1438						;CARRY=1
1439	003716	005067	001622	CLR	TEMP	;000000
1440	003722	000261		SEC		;SET C
1441	003724	005667	001614	SBC	TEMP	;000000-1=177777
1442	003730	100401		BMI	.+4	
1443	003732	000000		HLT		;N NOT SET
1444				;TEST TST		
1445	003734	000240		SCOPE		
1446	003736	005067	001602	CLR	TEMP	;000000
1447	003742	000277		SCC		;SET CODES
1448	003744	005767	001574	TST	TEMP	;N=0,Z=1
1449	003750	100001		BPL	.+4	
1450	003752	000000		HLT		;N WAS NOT CLEARED
1451	003754	000240		SCOPE		
1452				;BASIC TEST FOR REGISTER TEMP		
1453				;TEST "CLRB"		
1454				SCOPE		
1455	003756	000240		SCC		
1456	003760	000277		CLR	TEMP	;SHOULD SET Z
1457	003762	105067	001556	BEQ	.+4	;Z NOT SET
1458	003766	001401		HLT		
1459	003770	000000		;TEST "COMB"		
1460				SCOPE		
1461	003772	000240		SCC		
1462	003774	000277		CLR	TEMP	;000000
1463	003776	105067	001542	COMB	TEMP	;17777,N SHOULD BE SET
1464	004002	105167	001536	BMI	.+4	;N NOT SET
1465	004006	100401		HLT		
1466	004010	000000		;TEST "INCB"		
1467				SCOPE		
1468	004012	000240		SCC		
1469	004014	000277		CLR	TEMP	;CLEAR
1470	004016	105067	001522			

1471	004022	105167	001516	COMB	TEMP		
1472	004026	105267	001512	INCB	TEMP		:COMPLIMENT
1473	004032	001401		BEQ	.+4		:ALL ONES TO ZERO, AT Z
1474	004034	000000		HLT			:BRANCH ON Z
1475				;TEST "DECB"			:Z NOT SET
1476	004036	000240		SCOPE			
1477	004040	000277		SCC			
1478	004042	105067	001476	CLRB	TEMP		:CLEAR
1479	004046	105367	001472	DECB	TEMP		:ZERO MINUS 1=17777
1480	004052	100401		BMI	.+4		
1481	004054	000000		HLT			:N NOT SET
1482				;TEST "NEGB"			
1483	004056	000240		SCOPE			
1484	004060	000277		SCC			
1485	004062	105067	001456	CLRB	TEMP		:000000
1486	004066	105467	001452	NEGB	TEMP		:000000
1487	004072	001401		BEQ	.+4		:Z NOT SET
1488	004074	000000		HLT			:Z NOT SET
1489				;TEST "NEGB"			
1490	004076	000240		SCOPE			
1491	004100	000277		SCC			
1492	004102	105067	001436	CLRB	TEMP		:000000
1493	004106	105267	001432	INCB	TEMP		:000001
1494	004112	105467	001426	NEGB	TEMP		:177777
1495	004116	100401		BMI	.+4		
1496	004120	000000		HLT			:N NOT SET
1497				;TEST ADCB			
1498	004122	000240		SCOPE			
1499							:CARRY=1
1500	004124	105067	001414	CLRB	TEMP		:000000
1501	004130	000261		SEC			:SET C
1502	004132	105567	001406	ADCB	TEMP		:000001
1503	004136	001001		BNE	.+4		
1504	004140	000000		HLT			:Z NOT CLEARED
1505				;TEST "ADCB"			
1506	004142	000240		SCOPE			
1507	004144	000257		CCC			:CARRY=0
1508	004146	105067	001372	CLRB	TEMP		:000000
1509	004152	105567	001366	ADCB	TEMP		:ADD-CARRY=000000
1510	004156	001401		BEQ	.+4		:Z NOT SET
1511	004160	000000		HLT			:Z NOT SET
1512				;TEST "SBCB"			
1513	004162	000240		SCOPE			
1514							:CARRY=1
1515	004164	105067	001354	CLRB	TEMP		:000000
1516	004170	000261		SEC			:SET C
1517	004172	105667	001346	SBCB	TEMP		:000000-1=177777
1518	004176	100401		BMI	.+4		
1519	004200	000000		HLT			:N NOT SET
1520				;TEST TSTB			
1521	004202	000240		SCOPE			
1522	004204	105067	001334	CLRB	TEMP		:000000
1523	004210	000277		SCC			:SET CODES
1524	004212	105767	001326	TSTB	TEMP		:N=0,Z=1
1525	004216	100001		BPL	.+4		
1526	004220	000000		HLT			:N WAS NOT CLEARED

1527	004222	000240	SCOPE		
1528					
1529					
1530	004224	005000			;TEST MIX OF .WORD AND .BYTE INSTRUCTIONS
1531	004226	005100	CLR	%0	;DATA=000000
1532	004230	105000	COM	%0	;DATA=177777, CLR .EVEN
1533	004232	005700	CLRB	%0	;DATA=177400
1534	004234	100401	TST	%0	;TEST .WORD, SHOULD BE NEGATIVE
1535	004236	000000	BMI	+.4	
1536	004240	105700	HLT		; .WORD NOT NEGATIVE
1537	004242	100001	TSTB	%0	;TEST LSB, SHOULD BE ZERO
1538	004244	000000	BPL	+.4	
1539	004246	000240	HLT		;N SET, NOT ZERO
1540	004250	005000	SCOPE		
1541	004252	005100	CLR	%0	;DATA=000000
1542	004254	105000	COM	%0	;DATA=177777
1543	004256	005100	CLRB	%0	;DATA=177400
1544	004260	100001	COM	%0	;DATA=000377
1545	004262	000000	BPL	+.4	
1546	004264	105200	HLT		;N NOT CLEARED
1547	004266	001401	INCB	%0	;DATA=000000
1548	004270	000000	BEQ	+.4	
1549	004272	000240	HLT		;Z NOT SET, INCB FAILED
1550	004274	005000	SCOPE		
1551	004276	005100	CLR	%0	;DATA=000000
1552	004300	105000	COM	%0	;DATA=177777
1553	004302	005100	CLRB	%0	;DATA=177400
1554	004304	005200	COM	%0	;DATA 000377
1555	004306	001001	INC	%0	;DATA 000400
1556	004310	000000	BNE	+.4	;Z SHOULD NOT BE SET
1557	004312	105700	HLT		;Z WAS SET
1558	004314	001401	TSTB	%0	;LSB IS ZERO
1559	004316	000000	BEQ	+.4	;SHOULD BRANCH
1560	004320	000240	HLT		;LS.BYTE NOT ZERO
1561			SCOPE		
1562					
1563	004322	005001			;TEST MIX OF .WORD AND .BYTE INSTRUCTIONS
1564	004324	005101	CLR	%1	;DATA=000000
1565	004326	105001	COM	%1	;DATA=177777, CLR .EVEN
1566	004330	005701	CLRB	%1	;DATA=177400
1567	004332	100401	TST	%1	;TEST .WORD, SHOULD BE NEGATIVE
1568	004334	000000	BMI	+.4	
1569	004336	105701	HLT		; .WORD NOT NEGATIVE
1570	004340	100001	TSTB	%1	;TEST LSB, SHOULD BE ZERO
1571	004342	000000	BPL	+.4	
1572	004344	000240	HLT		;N SET, NOT ZERO
1573	004346	005001	SCOPE		
1574	004350	005101	CLR	%1	;DATA=000000
1575	004352	105001	COM	%1	;DATA=177777
1576	004354	005101	CLRB	%1	;DATA=177400
1577	004356	100001	COM	%1	;DATA=000377
1578	004360	000000	BPL	+.4	
1579	004362	105201	HLT		;N NOT CLEARED
1580	004364	001401	INCB	%1	;DATA=000000
1581	004366	000000	BEQ	+.4	
1582	004370	000240	HLT		;Z NOT SET, INCB FAILED
			SCOPE		

1583	004372	005001	CLR	%1	;DATA=000000
1584	004374	005101	COM	%1	;DATA=177777
1585	004376	105001	CLRB	%1	;DATA=177400
1586	004400	005101	COM	%1	;DATA 000377
1587	004402	005201	INC	%1	;DATA 000400
1588	004404	001001	BNE	.+4	;Z SHOULD NOT BE SET
1589	004406	000000	HLT		;Z WAS SET
1590	004410	105701	TSTB	%1	;LSB IS ZERO
1591	004412	001401	BEQ	.+4	;SHOULD BRANCH
1592	004414	000000	HLT		;LS.BYTE NOT ZERO
1593	004416	000240	SCOPE		
1594					
1595					
1596	004420	005002	CLR	%2	;DATA=000000
1597	004422	005102	COM	%2	;DATA=177777, CLR .EVEN
1598	004424	105002	CLRB	%2	;DATA=177400
1599	004426	005702	TST	%2	;TEST .WORD, SHOULD BE NEGATIVE
1600	004430	100401	BMI	.+4	
1601	004432	000000	HLT		; .WORD NOT NEGATIVE
1602	004434	105702	TSTB	%2	;TEST LSB, SHOULD BE ZERO
1603	004436	100001	BPL	.+4	
1604	004440	000000	HLT		;N SET, NOT ZERO
1605	004442	000240	SCOPE		
1606	004444	005002	CLR	%2	;DATA=000000
1607	004446	005102	COM	%2	;DATA=177777
1608	004450	105002	CLRB	%2	;DATA=177400
1609	004452	005102	COM	%2	;DATA=000377
1610	004454	100001	BPL	.+4	
1611	004456	000000	HLT		;N NOT CLEARED
1612	004460	105202	INCB	%2	;DATA=000000
1613	004462	001401	BEQ	.+4	
1614	004464	000000	HLT		;Z NOT SET, INCB FAILED
1615	004466	000240	SCOPE		
1616	004470	005002	CLR	%2	;DATA=000000
1617	004472	005102	COM	%2	;DATA=177777
1618	004474	105002	CLRB	%2	;DATA=177400
1619	004476	005102	COM	%2	;DATA 000377
1620	004500	005202	INC	%2	;DATA 000400
1621	004502	001001	BNE	.+4	;Z SHOULD NOT BE SET
1622	004504	000000	HLT		;Z WAS SET
1623	004506	105702	TSTB	%2	;LSB IS ZERO
1624	004510	001401	BEQ	.+4	;SHOULD BRANCH
1625	004512	000000	HLT		;LS.BYTE NOT ZERO
1626	004514	000240	SCOPE		
1627					
1628					
1629	004516	005003	CLR	%3	;DATA=000000
1630	004520	005103	COM	%3	;DATA=177777, CLR .EVEN
1631	004522	105003	CLRB	%3	;DATA=177400
1632	004524	005703	TST	%3	;TEST .WORD, SHOULD BE NEGATIVE
1633	004526	100401	BMI	.+4	
1634	004530	000000	HLT		; .WORD NOT NEGATIVE
1635	004532	105703	TSTB	%3	;TEST LSB, SHOULD BE ZERO
1636	004534	100001	BPL	.+4	
1637	004536	000000	HLT		;N SET, NOT ZERO
1638	004540	000240	SCOPE		

1639	004542	005003	CLR	%3	:DATA=000000
1640	004544	005103	COM	%3	:DATA=177777
1641	004546	105003	CLRB	%3	:DATA=177400
1642	004550	005103	COM	%3	:DATA=000377
1643	004552	100001	BPL	+.4	
1644	004554	000000	HLT		:N NOT CLEARED
1645	004556	105203	INCB	%3	:DATA=000000
1646	004560	001401	BEQ	+.4	
1647	004562	000000	HLT		:Z NOT SET, INCB FAILED
1648	004564	000240	SCOPE		
1649	004566	005003	CLR	%3	:DATA=000000
1650	004570	005103	COM	%3	:DATA=177777
1651	004572	105003	CLRB	%3	:DATA=177400
1652	004574	005103	COM	%3	:DATA 000377
1653	004576	005203	INC	%3	:DATA 000400
1654	004600	001001	BNE	+.4	:Z SHOULD NOT BE SET
1655	004602	000000	HLT		:Z WAS SET
1656	004604	105703	TSTB	%3	:LSB IS ZERO
1657	004606	001401	BEQ	+.4	:SHOULD BRANCH
1658	004610	000000	HLT		:LS.BYTE NOT ZERO
1659	004612	000240	SCOPE		

;TEST MIX OF .WORD AND .BYTE INSTRUCTIONS

1662	004614	005004	CLR	%4	:DATA=000000
1663	004616	005104	COM	%4	:DATA=177777, CLR .EVEN
1664	004620	105004	CLRB	%4	:DATA=177400
1665	004622	005704	TST	%4	:TEST .WORD, SHOULD BE NEGATIVE
1666	004624	100401	BMI	+.4	
1667	004626	000000	HLT		:.WORD NOT NEGATIVE
1668	004630	105704	TSTB	%4	:TEST LSB, SHOULD BE ZERO
1669	004632	100001	BPL	+.4	
1670	004634	000000	HLT		:N SET, NOT ZERO
1671	004636	000240	SCOPE		
1672	004640	005004	CLR	%4	:DATA=000000
1673	004642	005104	COM	%4	:DATA=177777
1674	004644	105004	CLRB	%4	:DATA=177400
1675	004646	005104	COM	%4	:DATA=000377
1676	004650	100001	BPL	+.4	
1677	004652	000000	HLT		:N NOT CLEARED
1678	004654	105204	INCB	%4	:DATA=000000
1679	004656	001401	BEQ	+.4	
1680	004660	000000	HLT		:Z NOT SET, INCB FAILED
1681	004662	000240	SCOPE		
1682	004664	005004	CLR	%4	:DATA=000000
1683	004666	005104	COM	%4	:DATA=177777
1684	004670	105004	CLRB	%4	:DATA=177400
1685	004672	005104	COM	%4	:DATA 000377
1686	004674	005204	INC	%4	:DATA 000400
1687	004676	001001	BNE	+.4	:Z SHOULD NOT BE SET
1688	004700	000000	HLT		:Z WAS SET
1689	004702	105704	TSTB	%4	:LSB IS ZERO
1690	004704	001401	BEQ	+.4	:SHOULD BRANCH
1691	004706	000000	HLT		:LS.BYTE NOT ZERO
1692	004710	000240	SCOPE		

;TEST MIX OF .WORD AND .BYTE INSTRUCTIONS

1695	004712	005005	CLR	%5	; DATA=000000
1696	004714	005105	COM	%5	; DATA=177777, CLR .EVEN
1697	004716	105005	CLRB	%5	; DATA=177400
1698	004720	005705	TST	%5	; TEST .WORD, SHOULD BE NEGATIVE
1699	004722	100401	BMI	+.4	
1700	004724	000000	HLT		; .WORD NOT NEGATIVE
1701	004726	105705	TSTB	%5	; TEST LSB, SHOULD BE ZERO
1702	004730	100001	BPL	+.4	
1703	004732	000000	HLT		; N SET, NOT ZERO
1704	004734	000240	SCOPE		
1705	004736	005005	CLR	%5	; DATA=000000
1706	004740	005105	COM	%5	; DATA=177777
1707	004742	105005	CLRB	%5	; DATA=177400
1708	004744	005105	COM	%5	; DATA=000377
1709	004746	100001	BPL	+.4	
1710	004750	000000	HLT		; N NOT CLEARED
1711	004752	105205	INCB	%5	; DATA=000000
1712	004754	001401	BEQ	+.4	
1713	004756	000000	HLT		; Z NOT SET, INCB FAILED
1714	004760	000240	SCOPE		
1715	004762	005005	CLR	%5	; DATA=000000
1716	004764	005105	COM	%5	; DATA=177777
1717	004766	105005	CLRB	%5	; DATA=177400
1718	004770	005105	COM	%5	; DATA 000377
1719	004772	005205	INC	%5	; DATA 000400
1720	004774	001001	BNE	+.4	; Z SHOULD NOT BE SET
1721	004776	000000	HLT		; Z WAS SET
1722	005000	105705	TSTB	%5	; LSB IS ZERO
1723	005002	001401	BEQ	+.4	; SHOULD BRANCH
1724	005004	000000	HLT		; LS.BYTE NOT ZERO
1725	005006	000240	SCOPE		
1726					
1727					
1728	005010	005006	CLR	%6	; DATA=000000
1729	005012	005106	COM	%6	; DATA=177777, CLR .EVEN
1730	005014	105006	CLRB	%6	; DATA=177400
1731	005016	005706	TST	%6	; TEST .WORD, SHOULD BE NEGATIVE
1732	005020	100401	BMI	+.4	
1733	005022	000000	HLT		; .WORD NOT NEGATIVE
1734	005024	105706	TSTB	%6	; TEST LSB, SHOULD BE ZERO
1735	005026	100001	BPL	+.4	
1736	005030	000000	HLT		; N SET, NOT ZERO
1737	005032	000240	SCOPE		
1738	005034	005006	CLR	%6	; DATA=000000
1739	005036	005106	COM	%6	; DATA=177777
1740	005040	105006	CLRB	%6	; DATA=177400
1741	005042	005106	COM	%6	; DATA=000377
1742	005044	100001	BPL	+.4	
1743	005046	000000	HLT		; N NOT CLEARED
1744	005050	105206	INCB	%6	; DATA=000000
1745	005052	001401	BEQ	+.4	
1746	005054	000000	HLT		; Z NOT SET, INCB FAILED
1747	005056	000240	SCOPE		
1748	005060	005006	CLR	%6	; DATA=000000
1749	005062	005106	COM	%6	; DATA=177777
1750	005064	105006	CLRB	%6	; DATA=177400

; TEST MIX OF .WORD AND .BYTE INSTRUCTIONS

1751	005066	005106		COM	%6		:DATA 000377
1752	005070	005206		INC	%6		:DATA 000400
1753	005072	001001		BNE	.+4		:Z SHOULD NOT BE SET
1754	005074	000000		HLT			:Z WAS SET
1755	005076	105706		TSTB	%6		:LSB IS ZERO
1756	005100	001401		BEQ	.+4		:SHOULD BRANCH
1757	005102	000000		HLT			:LS.BYTE NOT ZERO
1758	005104	000240		SCOPE			
1759							
1760							
1761	005106	005067	000432	CLR	TEMP		:DATA=000000
1762	005112	005167	000426	COM	TEMP		:DATA=177777, CLR .EVEN
1763	005116	105067	000422	CLRB	TEMP		:DATA=177400
1764	005122	005767	000416	TST	TEMP		:TEST .WORD, SHOULD BE NEGATIVE
1765	005126	100401		BMI	.+4		
1766	005130	000000		HLT			:.WORD NOT NEGATIVE
1767	005132	105767	000406	TSTB	TEMP		:TEST LSB, SHOULD BE ZERO
1768	005136	100001		BPL	.+4		
1769	005140	000000		HLT			:N SET, NOT ZERO
1770	005142	000240		SCOPE			
1771	005144	005067	000374	CLR	TEMP		:DATA=000000
1772	005150	005167	000370	COM	TEMP		:DATA=177777
1773	005154	105067	000364	CLRB	TEMP		:DATA=177400
1774	005160	005167	000360	COM	TEMP		:DATA=000377
1775	005164	100001		BPL	.+4		
1776	005166	000000		HLT			:N NOT CLEARED
1777	005170	105267	000350	INCB	TEMP		:DATA=000000
1778	005174	001401		BEQ	.+4		
1779	005176	000000		HLT			:Z NOT SET, INCB FAILED
1780	005200	000240		SCOPE			
1781	005202	005067	000336	CLR	TEMP		:DATA=000000
1782	005206	005167	000332	COM	TEMP		:DATA=177777
1783	005212	105067	000326	CLRB	TEMP		:DATA=177400
1784	005216	005167	000322	COM	TEMP		:DATA 000377
1785	005222	005267	000316	INC	TEMP		:DATA 000400
1786	005226	001001		BNE	.+4		:Z SHOULD NOT BE SET
1787	005230	000000		HLT			:Z WAS SET
1788	005232	105767	000306	TSTB	TEMP		:LSB IS ZERO
1789	005236	001401		BEQ	.+4		:SHOULD BRANCH
1790	005240	000000		HLT			:LS.BYTE NOT ZERO
1791	005242	000240		SCOPE			
1792							
1793							
1794							
1795							
1796	005244	000240		SCOPE			
1797	005246	000277		SCC			
1798	005250	105067	000271	CLRB	TEMP+1		:SHOULD SET Z
1799	005254	001401		BEQ	.+4		:Z NOT SET
1800	005256	000000		HLT			
1801							
1802	005260	000240		SCOPE			
1803	005262	000277		SCC			
1804	005264	105067	000255	CLRB	TEMP+1		:000000
1805	005270	105167	000251	COMB	TEMP+1		:17777 N SHOULD BE SET
1806	005274	100401		BMI	.+4		: "N" NOT SET

1807	005276	000000		HLT			
1808				;TEST "INCB"			
1809	005300	000240		SCOPE			
1810	005302	000277		SCC			
1811	005304	105067	000235	CLRB	TEMP+1		;CLEAR
1812	005310	105167	000231	COMB	TEMP+1		;COMPLIMENT
1813	005314	105267	000225	INCB	TEMP+1		;ALL ONES TO ZERO, AT Z
1814	005320	001401		BEQ	.+4		;BRANCH ON Z
1815	005322	000000		HLT			;Z NOT SET
1816				;TEST "DECB"			
1817	005324	000240		SCOPE			
1818	005326	000277		SCC			
1819	005330	105067	000211	CLRB	TEMP+1		;CLEAR
1820	005334	105367	000205	DECB	TEMP+1		;ZERO MINUS 1=17777
1821	005340	100401		BMI	.+4		
1822	005342	000000		HLT			;N NOT SET
1823				;TEST "NEGB"			
1824	005344	000240		SCOPE			
1825	005346	000277		SCC			
1826	005350	105067	000171	CLRB	TEMP+1		;000000
1827	005354	105467	000165	NEGB	TEMP+1		;000000
1828	005360	001401		BEQ	.+4		;Z NOT SET
1829	005362	000000		HLT			;Z NOT SET
1830				;TEST "NEGB"			
1831	005364	000240		SCOPE			
1832	005366	000277		SCC			
1833	005370	105067	000151	CLRB	TEMP+1		;000000
1834	005374	105267	000145	INCB	TEMP+1		;000001
1835	005400	105467	000141	NEGB	TEMP+1		;177777
1836	005404	100401		BMI	.+4		
1837	005406	000000		HLT			;N NOT SET
1838				;TEST ADCB			
1839	005410	000240		SCOPE			
1840							;CARRY=1
1841	005412	105067	000127	CLRB	TEMP+1		;000000
1842	005416	000261		SEC			;SET C
1843	005420	105567	000121	ADCB	TEMP+1		;000001
1844	005424	001001		BNE	.+4		
1845	005426	000000		HLT			;Z NOT CLEARED
1846				;TEST "ADCB"			
1847	005430	000240		SCOPE			
1848	005432	000257		CCC			;CARRY=0
1849	005434	105067	000105	CLRB	TEMP+1		;000000
1850	005440	105567	000101	ADCB	TEMP+1		;ADD-CARRY=000000
1851	005444	001401		BEQ	.+4		;Z NOT SET
1852	005446	000000		HLT			;Z NOT SET
1853				;TEST "SBCB"			
1854	005450	000240		SCOPE			
1855							;CARRY=1
1856	005452	105067	000067	CLRB	TEMP+1		;000000
1857	005456	000261		SEC			;SET C
1858	005460	105667	000061	SBCB	TEMP+1		;000000-1=177777
1859	005464	100401		BMI	.+4		
1860	005466	000000		HLT			;N NOT SET
1861				;TEST TSTB			
1862	005470	000240		SCOPE			

1863	005472	105067	000047		CLRB	TEMP+1		
1864	005476	000277			SCC			;SET CODES
1865	005500	105767	000041		TSTB	TEMP+1		;N=0,Z=1
1866	005504	100001			BPL	.+4		
1867	005506	000000			HLT			;N WAS NOT CLEARED
1868	005510	000240			SCOPE			
1869								
1870	005512	005267	000032		INC	TEMP+4		
1871	005516	001402			BEG	.+6		
1872	005520	000167	172454		JMP	BEGIN		
1873	005524	012737	000207	177566	MOV	#207, @#177566		
1874	005532	105737	177564		TSTB	@#177564		
1875	005536	100375			BPL	.-4		
1876	005540	000167	172434		JMP	BEGIN		
1877	005544	000000			TEMP	:0		
1878	005546	000000				0		
1879	005550	000000				0		
1880		000001			.END			

BEGIN 000200
 HLT = 000000

295#	1872	1876										
289#	305	312	320	327	334	342	350	357	365	372	381	388
396	403	410	418	426	433	441	448	459	466	474	481	488
496	504	511	519	526	535	542	550	557	564	572	580	587
595	602	613	620	628	635	642	650	658	665	673	680	689
696	704	711	718	726	734	741	749	756	767	774	782	789
796	804	812	819	827	834	843	850	858	865	872	880	888
895	903	910	921	928	936	943	950	958	966	973	981	988
997	1004	1012	1019	1026	1034	1042	1049	1057	1064	1075	1082	1090
1097	1104	1112	1120	1127	1135	1142	1151	1158	1166	1173	1180	1188
1196	1203	1211	1218	1229	1236	1244	1251	1258	1266	1274	1281	1289
1296	1305	1312	1320	1327	1334	1342	1350	1357	1365	1372	1383	1390
1398	1405	1412	1420	1428	1435	1443	1450	1459	1466	1474	1481	1488
1496	1504	1511	1519	1526	1535	1538	1545	1548	1556	1559	1568	1571
1578	1581	1589	1592	1601	1604	1611	1614	1622	1625	1634	1637	1644
1647	1655	1658	1667	1670	1677	1680	1688	1691	1700	1703	1710	1713
1721	1724	1733	1736	1743	1746	1754	1757	1766	1769	1776	1779	1787
1790	1800	1807	1815	1822	1829	1837	1845	1852	1860	1867		
290#	301	307	314	322	329	336	344	352	359	367	373	377
383	390	398	405	412	420	428	435	443	449	455	461	468
476	483	490	498	506	513	521	527	531	537	544	552	559
566	574	582	589	597	603	609	615	622	630	637	644	652
660	667	675	681	685	691	698	706	713	720	728	736	743
751	757	763	769	776	784	791	798	806	814	821	829	835
839	845	852	860	867	874	882	890	897	905	911	917	923
930	938	945	952	960	968	975	983	989	993	999	1006	1014
1021	1028	1036	1044	1051	1059	1065	1071	1077	1084	1092	1099	1106
1114	1122	1129	1137	1143	1147	1153	1160	1168	1175	1182	1190	1198
1205	1213	1219	1225	1231	1238	1246	1253	1260	1268	1276	1283	1291
1297	1301	1307	1314	1322	1329	1336	1344	1352	1359	1367	1373	1379
1385	1392	1400	1407	1414	1422	1430	1437	1445	1451	1455	1461	1468
1476	1483	1490	1498	1506	1513	1521	1527	1539	1549	1560	1572	1582
1593	1605	1615	1626	1638	1648	1659	1671	1681	1692	1704	1714	1725
1737	1747	1758	1770	1780	1791	1796	1802	1809	1817	1824	1831	1839
1847	1854	1862	1868									
291#												
1381#	1387*	1388*	1394*	1395*	1396*	1402*	1403*	1409*	1410*	1416*	1417*	1418*
1424#	1426*	1432*	1433*	1439*	1441*	1446*	1448	1457*	1463*	1464*	1470*	1471*
1472#	1478*	1479*	1485*	1486*	1492*	1493*	1494*	1500*	1502*	1508*	1509*	1515*
1517#	1522*	1524	1761*	1762*	1763*	1764	1767	1771*	1772*	1773*	1774*	1777*
1781#	1782*	1783*	1784*	1785*	1788	1798*	1804*	1805*	1811*	1812*	1813*	1819*
1820#	1826*	1827*	1833*	1834*	1835*	1841*	1843*	1849*	1850*	1856*	1858*	1863*
1865	1870*	1877#										
256#	257	259	261	263	265	267	269	271	273	275	277	279
281	283	285	287	292#	304	311	319	326	333	341	349	356
364	371	380	387	395	402	409	417	425	432	440	447	458
465	473	480	487	495	503	510	518	525	534	541	549	556
563	571	579	586	594	601	612	619	627	634	641	649	657
664	672	679	688	695	703	710	717	725	733	740	748	755
766	773	781	788	795	803	811	818	826	833	842	849	857
864	871	879	887	894	902	909	920	927	935	942	949	957
965	972	980	987	996	1003	1011	1018	1025	1033	1041	1048	1056
1063	1074	1081	1089	1096	1103	1111	1119	1126	1134	1141	1150	1157
1165	1172	1179	1187	1195	1202	1210	1217	1228	1235	1243	1250	1257
1265	1273	1280	1288	1295	1304	1311	1319	1326	1333	1341	1349	1356
1364	1371	1382	1389	1397	1404	1411	1419	1427	1434	1442	1449	1458

SCOPE = 000240

SR = 177570
 TEMP = 005544

= 005552

.SSB20	18
.SSCOP	18
.SSIZE	18
.SSUPR	18
.STRAP	18
.STYPB	18
.STYPD	18
.STYPE	18
.STYPO	18
.S4OCA	18
.1170	18

ADC	348 1433	355	502	509	656	663	810	817	964	971	1118	1125	1272	1279	1426
ADCB	424 1509	431 1843	578 1850	585	732	739	886	893	1040	1047	1194	1201	1348	1355	1502
BEQ	324 586 871 1165 1458 1723	319 612 894 1179 1473 1745	333 627 920 1202 1487 1756	356 641 935 1228 1510 1778	380 664 949 1243 1547 1789	395 688 972 1257 1558 1799	409 703 996 1280 1580 1814	432 717 1011 1304 1591 1828	458 740 1025 1319 1613 1851	473 766 1048 1333 1624 1871	487 781 1074 1356 1646 1871	510 795 1089 1382 1657	534 818 1103 1397 1679	549 842 1126 1411 1690	563 857 1150 1434 1712
BMI	311 594 879 1172 1465 1859	326 619 902 1187 1480	341 634 927 1210 1495	364 649 942 1235 1518	387 672 957 1250 1534	402 695 980 1265 1567	417 710 1003 1288 1600	440 725 1018 1311 1633	465 748 1033 1326 1666	480 773 1056 1341 1699	495 788 1081 1364 1732	518 803 1096 1389 1765	541 826 1111 1404 1806	556 849 1134 1419 1821	571 864 1157 1442 1836
BNE	349 1503	425 1555	503 1588	579	657	733	811	887	965	1041	1119	1195	1273	1349	1427
BPL	371 1525 1768	447 1537 1775	525 1544 1866	601 1570 1875	679 1577	755 1603	833 1610	909 1636	987 1643	1063 1669	1141 1676	1217 1702	1295 1709	1371 1735	1449 1742
CCC	353 1507	429 1848	507	583	661	737	815	891	969	1045	1123	1199	1277	1353	1431
CLR	303 492 765 954 1227 1416 1639	309 500 771 962 1233 1424 1649	316 508 778 970 1240 1432	324 515 786 977 1248 1439	331 522 793 984 1255 1446	338 611 800 1073 1262 1530	346 617 808 1079 1270 1540	354 624 816 1086 1278 1550	361 632 823 1094 1285 1563	368 639 830 1101 1292 1573	457 646 919 1108 1381 1583	463 654 925 1116 1387 1596	470 662 932 1124 1394 1606	478 669 940 1131 1402 1616	485 676 947 1138 1409 1629
CLRB	379 568 841 1030 1303 1492 1641 1804	385 576 847 1038 1309 1500 1651 1811	392 584 854 1046 1316 1508 1664 1819	400 591 862 1053 1324 1515 1674 1826	407 598 869 1060 1331 1522 1684 1833	414 607 876 1149 1338 1532 1697 1841	422 614 884 1155 1346 1542 1707 1849	430 625 892 1162 1354 1552 1717 1856	437 630 899 1170 1361 1565 1730 1863	444 644 906 1177 1368 1575 1740 1870	533 722 995 1184 1457 1585 1750 1763	539 730 1001 1192 1463 1598 1763 1773	546 738 1008 1200 1470 1608 1773 1783	554 745 1016 1207 1478 1618 1783 1798	561 752 1023 1214 1485 1631 1798
COM	310 1395 1619 1718	317 1531 1630 1729	464 1541 1640 1739	471 1543 1642 1741	618 1551 1650 1749	625 1553 1652 1751	772 1564 1663 1762	779 1574 1673 1772	926 1584 1683 1782	933 1594 1693 1792	1080 1586 1685 1784	1087 1597 1696	1234 1607 1706	1241 1609 1708	1388 1617 1716
COMB	386 1471	393 1805	540 1812	547	694	701	848	855	1002	1009	1156	1163	1310	1317	1464
DEC	325	479	633	787	941	1095	1249	1403							
DECB	401	555	709	863	1017	1171	1325	1479	1820						
HALT	258 288	260 289	262	264	266	268	270	272	274	276	278	280	282	284	286
INC	318 1417	339 1554	472 1587	493 1620	626 1653	647 1686	780 1719	801 1752	934 1785	955 1870	1088	1109	1242	1263	1396
INCB	394 1493	415 1546	548 1579	569 1612	702 1645	723 1678	856 1711	877 1744	1010 1777	1031 1813	1164 1834	1185	1318	1339	1472
JMP	1872	1876													
MOV	1873														
NEG	332 1418	340	486	494	640	648	794	802	948	956	1102	1110	1256	1264	1410

NEGB	408	416	562	570	716	724	870	878	1024	1032	1178	1186	1332	1340	1486
	1494	1827	1835												
SBC	363	517	671	825	979	1133	1287	1441							
SBCB	439	593	747	901	1055	1209	1363	1517	1858						
SCC	302	308	315	323	330	337	369	378	384	391	399	406	413	445	456
	462	469	477	484	491	523	532	538	545	553	560	567	599	610	616
	623	631	638	645	677	686	692	699	707	714	721	753	764	770	777
	785	792	799	831	840	846	853	861	868	875	907	918	924	931	939
	946	953	985	994	1000	1007	1015	1022	1029	1061	1072	1078	1085	1093	1100
	1107	1139	1148	1154	1161	1169	1176	1183	1215	1226	1232	1239	1247	1254	1261
	1293	1302	1308	1315	1323	1330	1337	1369	1380	1386	1393	1401	1408	1415	1447
	1456	1462	1469	1477	1484	1491	1523	1797	1803	1810	1818	1825	1832	1864	
SEC	347	362	423	438	501	516	577	592	655	670	731	746	809	824	885
	900	963	978	1039	1054	1117	1132	1193	1208	1271	1286	1347	1362	1425	1440
TST	1501	1516	1842	1857											
	370	524	678	832	986	1140	1294	1448	1533	1566	1599	1632	1665	1698	1731
TSTB	1764														
	446	600	754	908	1062	1216	1370	1524	1536	1557	1569	1590	1602	1623	1635
	1656	1668	1689	1701	1722	1734	1755	1767	1788	1865	1874				
.ENABL	1														
.END	1880														
.LIST	1														
.MACR	294	295	1529												
.MACRO	1														
.NLIST	1														
.REM	1														
.REPT	257														

ERRORS DETECTED: 0
 DEFAULT GLOBALS GENERATED: 0

* DOCA.SEQ/SOL/CRF/PAGNUM/NL:TOC=SYSMAC.CO,DOCA.P11
 RUN-TIME: 26 32 1 SECONDS
 RUN-TIME RATIO: 244/60=4.0
 CORE USED: 34K (67 PAGES)

