

KG11-A

CYCLIC REDUND CHECK TEST
MD-11-DZKGA-B

EP-DZKGA-B-DL-B

COPYRIGHT © 1977

FICHE 1 OF 1

APR 1977

digital

MADE IN USA

.REM :

IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DZKGA-B-D
PRODUCT NAME: KG11A - CYCLIC REDUNDANCY CHECK TEST
DATE RELEASED: MARCH, 1977
MAINTAINER: DIAGNOSTIC GROUP
NOTE: REV. A OF THIS PROGRAM OBSOLETE MD-11-DSK

COPYRIGHT 1971, 1977 BY DIGITAL EQUIPMENT CORPORATION
THE INFORMATION IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT
NOTICE AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY DIGITAL
EQUIPMENT CORPORATION. DIGITAL EQUIPMENT CORPORATION ASSUMES
NO RESPONSIBILITY FOR ANY ERRORS THAT MAY APPEAR IN THIS
DOCUMENT.

THE SOFTWARE DESCRIBED IN THIS DOCUMENT IS FURNISHED UNDER A
LICENSE AND MAY ONLY BE USED OR COPIED IN ACCORDANCE WITH
THE TERMS OF SUCH LICENSE.

DIGITAL EQUIPMENT CORPORATION ASSUMES NO RESPONSIBILITY
FOR THE USE OR RELIABILITY OF ITS SOFTWARE ON EQUIPMENT
THAT IS NOT SUPPLIED BY DIGITAL.

CONTENTS

ABSTRACT	PG. 3
REQUIREMENTS	PG. 3
LOADING--STORAGE	PG. 3
OPERATION	PG. 3
SWITCH REGISTER	PG. 4
NOTES	PG. 4
FULL TEST MODE	PG. 5
SELECT TEST MODE	PG. 6
ERRORS	PG. 8
SCOPE LOOP	PG. 9
FORCED ERROR TYPEOUT	PG. 10
INSTRUCTION TABLE	PG. 13
DATA WORD TABLE	PG. 16
TESTA	PG. 23
TESTB	PG. 24

001

ABSTRACT.

THIS PROGRAM TESTS THE LOGIC OF THE CYCLIC REDUNDANCY CHECK
DEVICE (KG11A).

REQUIREMENTS.

A STANDARD PDP-11 (WITH OR WITHOUT A HARDWARE SWITCH REGISTER)
AND A KG11

LOADING--STORAGE.

LOADING PROCEDURE FOR NORMAL BINARY TAPES SHOULD BE FOLLOWED.

DEVICE ADDRESS CHANGE.

TO CHANGE THE DEVICE ADDRESS (WHICH WAS LOADED AS 170700),
CHANGE THE CONTENTS OF THE LOCATION "DEVADR" SHOWN ON
PAGE 24/ SET THIS LOCATION TO THE ADDRESS OF THE CSR
DESIRED, THEN START (OR RESTART) AS GIVEN IN OPERATION BELOW.

OPERATION.

1. THIS PROGRAM MAY BE OPERATED IN TWO MODES.

- A. FULL TEST MODE.
THIS IS THE MAIN BODY OF THE PROGRAM AND SHOULD
BE USED TO ACCEPT OR DIAGNOSE A DEVICE.
TO RUN: START AT LOC. 200 WITH SWR15 SET.
(DETAIL ON PAGE 5.)
- B. SELECT TEST MODE
THIS IS A SUBPROGRAM TO ALLOW THE OPERATOR TO RUN
A SELECT INSTRUCTION ON A SELECT DATA WORD.
TO RUN: START AT LOC. 204 WITH SWR15 SET.
SELECT INSTRUCTION ON SWR5-0.
SELECT DATA WORD ON SWR11-6.
(DETAIL ON PAGE 6.)

EO1

SWITCH REGISTER.

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

CONTROL:

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

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

1. SWR15 SET, HALT ON ERROR.
RESET, BYPASS ERROR.
2. SWR14 SET, SCOPE LOOP ON ERROR.
RESET, BYPASS ERROR.
3. SWR13 SET, INHIBIT PRINTOUTS DURING SCOPE LOOP.
RESET, ALLOW PRINTOUTS DURING SCOPE LOOP.
4. SWR12 SET, INHIBIT TRACE TRAPPING.
RESET, ALLOW TRACE TRAPPING.
5. SWR11 SET, INHIBIT ITERATIONS.
RESET, ALLOW ITERATIONS.
6. SWR11 - SWR6 AND SWR5 - SWR0 ARE DEFINED IN THE
SELECT TEST MODE SECTION ON PG. 6 & 7.

FO1

FULL TEST MODE.

1. START OR RESTART.
 - A. ZERO THE SWR
 - B. LOAD 200 AND START
2. PROGRAM ACTION.
 - A. WHENEVER THE PROGRAM IS STARTED, OR RESTARTED, THE TTY WILL TYPE: KG11A.
 - B. IF THE SOFTWARE SWITCH REGISTER IS SELECTED THEN THE FOLLOWING WILL BE TYPED:
SWR=XXXXXX NEW=(REFER TO SWITCH REGISTER SECTION FOR OPERATOR ACTIONS)
 - C. IF THERE ARE NO ERRORS DETECTED, THE PROGRAM WILL LOOP INDEFINITELY AND WILL RING THE TTY BELL ONCE FOR EACH PASS. TRACE TRAP IS EFFECTIVE AND EACH SUBTEST IS BEING ITERATED 100 TIMES.
 - D. IF AN ERROR OCCURS, A ONE LINE ERROR MESSAGE WILL BE TYPED ON THE TTY AND THE PROGRAM WILL HALT. (SEE THE ERROR SECTION ON PAGE 8.)
3. OPERATER CONTROL VIA THE SWR.

(REFER TO SECTION ON SWITCH REGISTER SETTINGS FOR SOFTWARE SWITCH REGISTER.)

 - A. SWR15 SET. (NORMAL)
HALT ON ERROR AFTER ERROR MESSAGE IS TYPED.

SWR15 RESET.
TYPE THE ERROR MESSAGE AND CONTINUE TO THE NEXT ITERATION OF THE CURRENT TEST OR TO THE NEXT SUBTEST.
 - B. SWR12 SET.
INHIBIT TRACE TRAP.

SWR12 RESET (NORMAL)
ALLOW TRACE TRAP.
 - C. SWR11 SET.
INHIBIT ITERATIONS

SWR11 RESET (NORMAL)
ALLOW ITERATIONS

GO1

SELECT TEST MODE.

1. START OR RESTART.
 - A. RESET SWR15 THRU SWR0.
 - B. LOAD ADDRESS 204
 - C. SELECT THE INSTRUCTION TO BE TESTED FROM THE LIST OF INSTRUCTIONS ON PAGE NN OF THE PROGRAM LISTING.
SET SWR5 THRU SWR0 TO THE "I" NUMBER GIVEN WITH SAID INSTRUCTION.
 - D. SELECT THE DATA WORD TO BE TESTED FROM THE LIST OF DATA WORDS GIVEN ON PAGES NN AND NN OF THE PROGRAM LISTING.
SET SWR11 THRU SWR6 TO THE "D" NUMBER GIVEN WITH THE SAID DATA WORD.
 - E. START.
 - F. ****REFER TO SECTION ON SWITCH SETTINGS FOR SOFTWARE SWITCH REGISTER ACTION.

SPECIAL NOTES ON C. AND D. ABOVE.

1. THE SELECTED INSTRUCTION AND/OR THE SELECTED DATA MAY BE CHANGED WHILE THE PROGRAM IS RUNNING.
2. IF SWR11 THRU SWR6 ARE ALL RESET, THEN THE SELECTED INSTRUCTION WILL RUN ON ALL DATA WORDS.
3. IF SWR5 THRU SWR0 ARE ALL RESET THEN ALL INSTRUCTIONS WILL BE RUN ON THE SELECTED DATA WORD.
4. IF SWR11 THRU SWR6 AND SWR5 THRU SWR0 ARE ALL RESET, THEN ALL INSTRUCTIONS WILL BE RUN ON ALL DATA WORDS.

H01

2. PROGRAM ACTION

- A. IF THERE ARE NO ERRORS THE PROGRAM WILL LOOP THE SELECTED INSTRUCTION (SWR5-0) USING THE SELECTED DATA (SWR11-6). TRACE TRAP IS EFFECTIVE.
- B. IF AN ERROR OCCURS, A ONE LINE ERROR MESSAGE WILL BE TYPED ON THE TTY AND THE PROGRAM WILL HALT. (SEE THE ERROR SECTION ON PAGE 8.)

(REFER TO SWITCH SETTING SECTION FOR USE OF SOFTWARE SWITCH REGISTER)

3. OPERATER CONTROL VIA THE SWR.

(REFER TO SECTION ON SWITCH SETTING'S FOR SOFTWARE SWITCH REGISTER DYNAMIC CHANGING.)

- A. SWR15 SET. (NORMAL)
HALT ON ERROR AFTER ERROR MESSAGE IS TYPED.

SWR15 RESET.
TYPE THE ERROR MESSAGE AND CONTINUE TESTING THE SELECTED INSTRUCTION (SWR5-0) USING THE SELECTED DATA (SWR11-6)
- B. SWR12 SET.
INHIBIT TRACE TRAP.

SWR12 RESET. (NORMAL)
ALLOW TRACE TRAP.
- C. SWR11 THRU SWR6.
SELECTED DATA WORD.
- D. SWR5 THRU SR0.
SELECTED INSTRUCTION.

ERRORS

1. ERROR MESSAGE

***ROUTINE CHECKS FOR THE DYNAMIC CHANGING OF THE SOFTWARE SWITCH REGISTER REFER TO SWITCH SETTING SECTION FOR OPERATOR ACTION.
TESTX IXX DXX SXXXXXX HXXXXXX

TESTX (X = A OR B)
THIS IS THE NAME (TAG) OF THE TEST THAT WAS IN USE
AT THE TIME OF THE ERROR.
TESTA IS ON PAGE 27 OF THE PROG. LIST.
TESTB IS ON PAGE 28 OF THE PROG. LIST.

IXX (XX = A NUMBER FROM 01 THRU 57)
THIS IS THE NAME/NUMBER (TAG) OF THE INSTRUCTION IN
USE AT THE TIME OF THE ERROR.
R1 (INST. POINTER) POINTS AT THIS INSTRUCTION.
THE INSTRUCTION TABLE IS ON PAGE 18 OF THE PROG. LIST.

DXX (XX = A NUMBER FROM 01 THRU 77)
THIS IS THE NAME/NUMBER (TAG) OF THE DATA WORD IN
USE AT THE TIME OF THE ERROR.
R2 (DATA WORD POINTER) POINTS AT THIS DATA WORD.
THE DATA WORD TABLE IS ON PG. 20 OF THE PROG. LIST.

SXXXXXX (XXXXXX = ANY 6 DIGIT, 16 BIT, OCTAL NUMBER)
THIS IS THE SIMULATED (GOOD) BCC WORD.

HXXXXXX (XXXXXX = ANY 6 DIGIT, 16 BIT, OCTAL NUMBER)
THIS IS THE HARDWARE (BAD) BCC WORD.

DONE BIT: S\S (EACH X CAN =0 OR 1)
THIS IS THE STATUS OF THE DONE BIT (BIT 7 OF THE CSR).
THE FIRST NUMBER (X\) IS WHAT THE DONE BIT
SHOULD BE (GOOD). THE SECOND NUMBER (\X) IS
WHAT THE DONE BIT ACTUALLY WAS.

2. OPTIONS AFTER A HALT ON ERROR.

***IF THE SOFTWARE SWITCH REGISTER IS USED THEN THE OPERATOR
CAN CHANGE THE SWREG LOCATION BY TYPING A 1G AND THEN CONTINUING.***
A. SCOPE LOOP. SEE SCOPE LOOP SECTION.

B. BYPASS THIS ERROR AND CONTINUE TO THE NEXT ITERATION
OR SUBTEST.

1. RESET SWR14 AND SWR15.

2. CONTINUE.

C. UTILIZE SELECT TEST MODE (PAGE 6)

J01

SCOPE LOOP

ROUTINE CHECKS FOR IG FUNCTION.

1. SET UP.
 - A. SET SWR14.
 - B. RESET SWR15.
 - C. CONTINUE.
2. PROGRAM ACTION.

THE PROGRAM WILL SCOPE LOOP ON THE FAILING TEST FOR AS LONG AS SWR14 IS SET, AND SWR15 IS RESET.
3. OPERATOR CONTROL VIA THE SWR.
 - A. SWR13 SET.
INHIBIT ERROR TYPEOUTS.

SWR13 RESET.
ALLOW ERROR TYPEOUTS.
 - B. SWR12 SET.
INHIBIT TRACE TRAPS.

SWR12 RESET.
ALLOW TRACE TRAPS.

K01

FORCED ERROR TYPEOUT.

IN THE EVENT OF AN UNEXPECTED OR ILLEGAL TRAP, OR AT ANY TIME THE OPERATOR DEEMS IT USEFUL, THE PROGRAM CAN BE HALTED (IF IT HASN'T ALREADY) AND A TYPEOUT CAN BE OBTAINED AS TO THE STATUS OF THE PROGRAM.

THIS TYPEOUT IS THE SAME ONE USED IN THE EVENT OF AN ACTUAL ERROR. (SEE ERROR MESSAGE ON PG. 8.)

1. HALT THE PROGRAM
2. START AT LOC. 210. (SWR SETTINGS ARE IMMATERIAL.)

THE TYPEOUT WILL BE MADE AND THE PROGRAM WILL HALT. THE PROGRAM CAN NOW BE RESTARTED. (SEE OPERATION, PG. 3.)

%

L01

415
416
417
418
419
420
421
422
423
424
425
426
427
428
429
430
431
432
433
434
435
436
437
438
439
440
441
442
443
444
445
446
447
448
449
450
451
452
453
454
455
456
457

;KG11A CYCLIC REDUNDANCY CHECK DEVICE TEST.
;COPYRIGHT 1976,1977 DIGITAL EQUIPMENT CORP., MAYNARD, MASS. 01754.

;PROGRAM OBSOLETES MD-11-D8K
;RELEASED 21 MAY 76 BY SAM CARPENTER
;SUPPORTS THE SOFTWARE SWITCH REGISTER LOC.176
;ALSO SUPPORTS THE DYNAMIC LOADING OF LOC. 176
;REVISED TO MEET ALL ACT11 SPEC.S; REV. B RELEASED FEB. 1977

;TRAP CATCHER (LOC. 0 TO LOC. 776)*****

000030

.REPT 30
.+2
HALT
.ENDR

;TRAPPED TO PREVIOUS ADDRESS.

000030

.REPT 30
.+2
HALT
.ENDR

;TRAPPED TO PREVIOUS ADDRESS.

000030

.REPT 30
.+2
HALT
.ENDR

;TRAPPED TO PREVIOUS ADDRESS.

000030

.REPT 30
.+2
HALT
.ENDR

;TRAPPED TO PREVIOUS ADDRESS.

000030

.REPT 30
.+2
HALT
.ENDR

;TRAPPED TO PREVIOUS ADDRESS.

000010

.REPT 10
.+2
HALT
.ENDR

;TRAPPED TO PREVIOUS ADDRESS.

MO1

```

458
459      000014      000014      . =14
460      000014      004042      TRTRTN
461      000016      000340      340
462      000030      000030      . =30
463      000030      003154      ERR
464      000032      000340      340
465      000034      000034      . =34
466      000034      004030      SCORCD
467      000036      000340      340
468      000046      000046      . =46
469      000046      002406      SENDAD
470      000052      000052      . =52
471      000052      000000      000000
472
473      ;;SOFTWARE SWITCH REGISTER*****
474
475      000176      000176      . =176
476      000176      000000      SWREG: 0 ;SOFTWARE SWITCH REGISTER
477
478      ;;PROGRAM STARTS*****
479
480      000200      000200      . =200
481      000200      000167      001456      NORMAL: JMP IDENT
482      000204      000204      . =204
483      000204      000167      001606      SELECT: JMP INTA
484      000210      000210      . =210
485      000210      000167      003122      FORERR: JMP FORCER
486

```

NO1

497
 498
 489 001000 001000
 490 001002 000402
 491 001004 004104
 492 001006 001002
 493 001008 004104
 494 001010 001402
 495 001012 004104
 496 001014 002002
 497 001016 004104
 498 001020 002402
 499 001022 004104
 500 001024 003002
 501 001026 004104
 502 001030 003402
 503 001032 004104
 504 001034 004002
 505 001036 004104
 506 001040 000403
 507 001042 004060
 508 001044 001003
 509 001046 004060
 510 001050 001403
 511 001052 004060
 512 001054 002003
 513 001056 004060
 514 001060 002403
 515 001062 004060
 516 001064 003003
 517 001066 004060
 518 001070 003403
 519 001072 004060
 520 001074 004003
 521 001076 004060
 522 001100 000401
 523 001102 004214
 524 001104 001001
 525 001106 004214
 526 001110 001401
 527 001112 004214
 528 001114 002001
 529 001116 004214
 530 001120 002401
 531 001122 004214
 532 001124 003001
 533 001126 004214
 534 001130 003401
 535 001132 004214
 536 001134 004001
 537 001136 004214
 538 001140 000405
 539 001142 004352
 540 001144 001005
 541 001146 004352

; INSTRUCTION TABLE

I01: 001000 ;LRC8 1 STEP.
 I02: 001002 ;LRC8 2 STEPS.
 I03: 001402 ;LRC8 3 STEPS.
 I04: 002002 ;LRC8 4 STEPS.
 I05: 002402 ;LRC8 5 STEPS.
 I06: 003002 ;LRC8 6 STEPS.
 I07: 003402 ;LRC8 7 STEPS.
 I10: 004002 ;LRC8 10 STEPS.
 I11: 000403 ;LRC16 1 STEP.
 I12: 001003 ;LRC16 2 STEPS.
 I13: 001403 ;LRC16 3 STEPS.
 I14: 002003 ;LRC16 4 STEPS.
 I15: 002403 ;LRC16 5 STEPS.
 I16: 003003 ;LRC16 6 STEPS.
 I17: 003403 ;LRC16 7 STEPS.
 I20: 004003 ;LRC16 10 STEPS.
 I21: 000401 ;CRC16 1 STEP.
 I22: 001001 ;CRC16 2 STEPS.
 I23: 001401 ;CRC16 3 STEPS.
 I24: 002001 ;CRC16 4 STEPS.
 I25: 002401 ;CRC16 5 STEPS.
 I26: 003001 ;CRC16 6 STEPS.
 I27: 003401 ;CRC16 7 STEPS.
 I30: 004001 ;CRC16 10 STEPS.
 I31: 000405 ;CCITT 1 STEP.
 I32: 001005 ;CCITT 2 STEPS.

B02

541	001150	001405	I33:	001405	;CCITT 3 STEPS.
542	001152	004352		SMCITC	
543	001154	002005	I34:	002005	;CCITT 4 STEPS.
544	001156	004352		SMCITC	
545	001160	002405	I35:	002405	;CCITT 5 STEPS.
546	001162	004352		SMCITC	
547	001164	003005	I36:	003005	;CCITT 6 STEPS.
548	001166	004352		SMCITC	
549	001170	003405	I37:	003405	;CCITT 7 STEPS.
550	001172	004352		SMCITC	
551	001174	004005	I40:	004005	;CCITT 10 STEPS.
552	001176	004352		SMCITC	
553	001200	000400	I41:	000400	;CRC12 1 STEP.
554	001202	004502		SMC12B	
555	001204	001000	I42:	001000	;CRC12 2 STEPS.
556	001206	004502		SMC12B	
557	001210	001400	I43:	001400	;CRC12 3 STEPS.
558	001212	004502		SMC12B	
559	001214	002000	I44:	002000	;CRC12 4 STEPS.
560	001216	004502		SMC12B	
561	001220	002400	I45:	002400	;CRC12 5 STEPS.
562	001222	004502		SMC12B	
563	001224	003000	I46:	003000	;CRC12 6 STEPS.
564	001226	004502		SMC12B	
565	001230	000102	I47:	000102	;LRC8 ONE BYTE DATA.
566	001232	004076		SMLRCE	
567	001234	000112	I50:	000112	;LRC8 TWO BYTE DATA.
568	001236	004070		SMLRCD	
569	001240	000103	I51:	000103	;LRC16 ONE BYTE DATA.
570	001242	004052		SMLRCB	
571	001244	000113	I52:	000113	;LRC16 TWO BYTE DATA.
572	001246	004044		SMLRCA	
573	001250	000101	I53:	000101	;CRC16 ONE BYTE DATA.
574	001252	004206		SMC16B	
575	001254	000111	I54:	000111	;CRC16 TWO BYTE DATA.
576	001256	004200		SMC16A	
577	001260	000105	I55:	000105	;CCITT ONE BYTE DATA.
578	001262	004344		SMCITB	
579	001264	000115	I56:	000115	;CCITT TWO BYTE DATA
580	001266	004336		SMCITA	
581	001270	000100	I57:	000100	;CRC12 ONE BYTE DATA.
582	001272	004474		SMC12A	
583	001274	000102	I60:	000102	;RESERVED.
584	001276	004076		SMLRCE	
585	001300	000102	I61:	000102	;RESERVED.
586	001302	004076		SMLRCE	
587	001304	000102	I62:	000102	;RESERVED.
588	001306	004076		SMLRCE	
589	001310	000102	I63:	000102	;RESERVED.
590	001312	004076		SMLRCE	
591	001314	000102	I64:	000102	;RESERVED.
592	001316	004076		SMLRCE	
593	001320	000102	I65:	000102	;RESERVED
594	001322	004076		SMLRCE	

596	001324	000102	I66:	000102	: RESERVED
597	001326	004076		SMLRCE	
598	001330	000102	I67:	000102	: RESERVED
599	001332	004076		SMLRCE	
600	001334	000102	I70:	000102	: RESERVED
601	001336	004076		SMLRCE	
602	001340	000102	I71:	000102	: RESERVED
603	001342	004076		SMLRCE	
604	001344	000102	I72:	000102	: RESERVED
605	001346	004076		SMLRCE	
606	001350	000102	I73:	000102	: RESERVED
607	001352	004076		SMLRCE	
608	001354	000102	I74:	000102	: RESERVED
609	001356	004076		SMLRCE	
610	001360	000102	I75:	000102	: RESERVED
611	001362	004076		SMLRCE	
612	001364	000102	I76:	000102	: RESERVED
613	001366	004076		SMLRCE	
614	001370	000102	I77:	000102	: RESERVED
615	001372	004076		SMLRCE	
616					

617
618
619
620
621
622
623
624
625
626
627
628
629
630
631
632
633
634
635
636
637
638
639
640
641
642
643
644
645
646
647
648
649
650

001374 000001
001376 000002
001400 000004
001402 000010
001404 000020
001406 000040
001410 000100
001412 000200
001414 000400
001416 001000
001420 002000
001422 004000
001424 010000
001426 020000
001430 040000
001432 100000
001434 177776
001436 177775
001440 177773
001442 177767
001444 177757
001446 177737
001450 177677
001452 177577
001454 177377
001456 176777
001460 175777
001462 173777
001464 167777
001466 157777
001470 137777
001472 077777

:DATA WORD TABLE

D01: 000001
D02: 000002
D03: 000004
D04: 000010
D05: 000020
D06: 000040
D07: 000100
D10: 000200
D11: 000400
D12: 001000
D13: 002000
D14: 004000
D15: 010000
D16: 020000
D17: 040000
D20: 100000
D21: 177776
D22: 177775
D23: 177773
D24: 177767
D25: 177757
D26: 177737
D27: 177677
D30: 177577
D31: 177377
D32: 176777
D33: 175777
D34: 173777
D35: 167777
D36: 157777
D37: 137777
D40: 077777

651 001474 052525
652 001476 125252
653 001500 031463
654 001502 146314
655 001504 070707
656 001506 107070
657 001510 007417
658 001512 170360
659 001514 041045
660 001516 136732
661 001520 154321
662 001522 023456
663 001524 133333
664 001526 044444
665 001530 000000
666 001532 177777
667 001534 000000
668 001536 111111
669 001540 022222
670 001542 133333
671 001544 044444
672 001546 155555
673 001550 066666
674 001552 177777
675 001554 101010
676 001556 111111
677 001560 121212
678 001562 131313
679 001564 141414
680 001566 151515
681 001570 161616

D41: 052525
D42: 125252
D43: 031463
D44: 146314
D45: 070707
D46: 107070
D47: 007417
D50: 170360
D51: 041045
D52: 136732
D53: 154321
D54: 023456
D55: 133333
D56: 044444
D57: 000000
D60: 177777
D61: 000000
D62: 111111
D63: 022222
D64: 133333
D65: 044444
D66: 155555
D67: 066666
D70: 177777
D71: 101010
D72: 111111
D73: 121212
D74: 131313
D75: 141414
D76: 151515
D77: 161616

F02

;;EQUATES, CONSTANTS AND VARIABLES

682				
683				
684				
685				
686		000000	R0=%0	;WORK
687		000001	R1=%1	;INSTRUCTION POINTER.
688		000002	R2=%2	;DATA POINTER.
689		000003	R3=%3	;DEVICE ADDRESS POINTER (BCC).
690		000004	R4=%4	;WORK
691		000005	R5=%5	;SUBROUTINES.
692		000006	SP=%6	;STACK POINTER
693		000007	PC=%7	;PC
694		000007	R7=PC	
695	001572	177570	SWR: 177570	;SWITCH REGISTER.
696		177776	PS=177776	;PROCESSOR STATUS
697		104400	SCOPE=TRAP	
698		104000	HLT=EMT	
699		000240	NOP=240	
700		177560	TKCSR= 177560	;TTY KEYBOARD STATUS
701		177562	TKDBR= 177562	;TTY KEYBOARD BUFFER
702		177564	TPCSR= 177564	;PRINTER STATUS
703		177566	TPDBR= 177566	;PRINTER BUFFER
704		001000	INTBEG=101	
705		001270	INTEND=157	
706		001374	DATBEG=001	
707		001570	DATEND=077	
708	001574	170700	DEVADR: 170700	
709	001576	000000	DFLG: 0	
710	001600	000000	DFLGA: 0	
711	001602	000000	EFLG: 0	
712	001604	000000	HBCC: 0	
713	001606	000000	HDONE: 0	
714	001610	000000	IFLG: 0	
715	001612	000000	IFLGA: 0	
716	001614	000000	ITACNT: 0	
717	001616	000100	ITANO: 100	
718	001620	000000	OPSTAT: 0	
719	001622	000000	OTACNT: 0	
720	001624	000000	OTAWKA: 0	
721	001626	000000	OTAWKB: 0	
722	001630	000000	SELFGL: 0	
723	001632	000000	SCORTN: 0	
724	001634	000000	SMBCC: 0	
725	001636	000000	SMBCCA: 0	
726	001640	000000	SMCNT: 0	
727	001642	000000	SMDATA: 0	
728	001644	000000	SMDONE: 0	
729	001646	000000	SMWKA: 0	
730	001650	000000	SMWKB: 0	
731	001652	000000	STCNT: 0	
732	001654	000000	TEWK: 0	
733	001656	000000	FTITLE: 0	
734	001660	000000	PASCNT: 0	

;TITLE PRINTED = 1

G02

```

735
736
737
738 001662 000005 IDENT: RESET
739 001664 012706 001000 MOV #1000,SP ;SET SP TO 1000.
740 001670 023737 000042 000046 CMP @#42,@#46 ;IN ACT11 AUTOMATIC MODE?
741 001676 001444 BEQ INIT ;YES, SKIP TITLE
742 001700 005767 177752 TST FTITLE ;HAS TITLE BEEN PRINTED BEFORE?
743 001704 001041 BNE INIT ;YES, SKIP TITLE
744 001706 004567 001746 JSR R5,TYPE ;TYPE THE PROG. NAME.
745 001712 077536 043513 030461 .ASCII /+/(177)/KG11A - CYCLIC REDUNDANCY CHECK TEST, MC-11-DZKGA-B/(177)/+//
746 001720 020101 020055 054503
747 001726 046103 041511 051040
748 001734 042105 047125 040504
749 001742 041516 020131 044103
750 001750 041505 020113 0 2524
751 001756 052123 020054 042115
752 001764 030455 026461 055104
753 001772 043513 026501 077502
754 002000 057536
755
756 002002 012767 000001 177646 .EVEN
757 002010 005067 177614 INIT: MOV #1,FTITLE ;SET FLAG
758 002014 000402 BR CLR SELFLG ;CLEAR SELFLG (START WAS FROM LOC. 200.)
759 002016 005267 177606 INTA: BR INTB ;BRANCH.
760 002022 000005 INTB: INC SELFLG ;SET SELFLG (START WAS FROM LOC. 204.)
761 002024 005067 177552 CLR EFLG
762 002030 012706 001000 MOV #1000,SP
763 002034 023737 000042 000046 CMP @#42,@#46 ;ARE WE IN ACT11 AUTOMATIC MODE?
764 002042 001402 BEQ +6 ;YES, NEVER MIND ABOUT SWR
765 002044 004767 002600 JSR PC,SUSWR ;CHECK FOR HARDWARE SWITCH REGISTER
766 002050 016703 177520 MOV DEVADR,R3 ;R3 = DEVICE ADDRESS.
767 002054 005723 TST (R3)+ ;ADJUST R3 TO POINT AT BCC.
768 002056 004567 000012 JSR R5,OPCHG ;READ SWR & SET UP PROG. ACCORDINGLY.
769 002062 005767 177542 TST SELFLG ;WAS START FROM LOC. 200?
770 002066 001434 BEQ FULMOD ;YES - BRANCH.
771 002070 000167 000324 JMP SELMOD ;NO. - JUMP.
772
773
774 002074 017767 177472 177516 OPCHG: MOV @SWR,OPSTAT ;STORE SWR.
775 002102 052767 000020 175666 BIS #20,PS ;SET "T" BIT IN PS.
776 002110 032767 010000 177502 BIT #10000,OPSTAT ;INHIBIT TRACE TRAP?
777 002116 001403 BEQ OPCA ;NO. - BRANCH
778 002120 042767 000020 175650 BIC #20,PS ;YES. - CLEAR "T" BIT IN PS.
779 002126 005767 177476 OPCA: TST SELFLG ;SELECT MODE (START WAS FROM 202)?
780 002132 001011 BNE OPCB ;YES. - BRANCH.
781 002134 016767 177456 177452 MOV ITANO,ITACNT ;NO. - SET ITERATE CNT. TO ITERATE NO.
782 002142 032767 004000 177450 BIT #4000,OPSTAT ;INHIBIT ITERATIONS?
783 002150 001402 BEQ OPCB ;NO. - BRANCH.
784 002152 005067 177436 CLR ITACNT ;YES. - CLEAR ITERATE COUNTER
785 002156 000205 OPCB: RTS ;RETURN.

```

```

786
787
788
789
790
791 002160 012701 001000 FULMOD: MOV #INTBEG,R1 ;INST. POINTER (R1) SET TO BEGIN OF INST. TABLE.
792 002164 012702 001374 FULA: MOV #DATABEG,R2 ;DATA POINTER (R2) SET TO BEGIN OF DATA TABLE.
793 002170 116167 000001 177442 FULB: MOVB +1(R1),SMCNT ;STEP COUNT (IF ANY) SET FOR SIMULATE.
794 002176 004767 002542 JSR PC,CKSWR ;CHECK FOR CNTL G TO LOAD SWR
795 002202 005067 177426 CLR SMBCC ;SIMULATED BCC SET TO 0.
796 002206 052767 000200 177430 BIS #200,SMDONE ;SET THE SIMULATED DONE BIT.
797 002214 004571 000002 JSR R5,#2(R1) ;SIMULATE INST. (VIA R1) ON DATA (VIA R2).
798 002220 105761 000001 FULC: TSTB +1(R1) ;IS THE INST. A STEP TYPE?
799 002224 001413 BEQ FULF ;NO - BRANCH.
800 002226 031127 004000 BIT (R1),#4000 ;YES. - IS THE INST. I10,I20,I30, OR I40?
801 002232 001005 BNE FULD ;YES. - BRANCH.
802 002234 021167 176764 CMP (R1),I46 ;NO. - IS THE INST. I46?
803 002240 001402 BEQ FULD ;YES. - BRANCH.
804 002242 005067 177376 CLR SMDONE ;NO. - CLEAR THE SIMULATED DONE BIT.
805 002246 004567 000476 FULD: JSR R5,TESTA ;DO TEST A (STEP INST. TEST).
806 002252 000402 BR FULF ;BRANCH.
807 002254 004567 000606 FULE: JSR R5,TESTB ;NO. - DO TEST B (NON-STEP INST. TEST).
808 002260 027767 177306 177332 FULF: CMP ASWR,OPSTAT ;HAS OPERATION STATUS STATUS (SWR) CHANGED?
809 002266 001403 BEQ FULG ;NO. - BRANCH.
810 002270 004567 177600 JSR R5,OPCHG ;YES. - GO SET UP NEW OPERATION STATUS.
811 002274 000731 BR FULMOD ;BRANCH.
812 002276 032767 004000 177314 FULG: BIT #4000,OPSTAT ;NO. - ITERATE?
813 002304 001011 BNE FULH ;NO. - BRANCH
814 002306 005767 177346 TST PASCNT ;FIRST PASS?
815 002312 001406 BEQ FULH ;YES, SKIP ITERATIONS THIS TIME
816 002314 005367 177274 DEC ITACNT ;YES. - DECREMENT ITERATE COUNTER. IS IT=0?
817 002320 001337 BNE FULC ;NO. - BRANCH. (KEEP ITERATING).
818 002322 016767 177270 177264 FULH: MOV ITANO,ITACNT ;YES. - SET ITERATE CTR. TO ITERATE NUMBER.
819 002330 020227 001570 FULH: CMP R2,#DATEND ;HAVE ALL DATA WORDS BEEN TESTED?
820 002334 001403 BEQ FULI ;YES - BRANCH.
821 002336 062702 000002 ADD #2,R2 ;NO. - ADVANCE DATA POINTER (R2).
822 002342 000712 BR FULB ;BRANCH.
823 002344 020127 001270 FULI: CMP R1,#INTEND ;HAVE ALL INSTS. BEEN TESTED?
824 002350 001403 BEQ FULJ ;YES. - BRANCH.
825 002352 062701 000004 ADD #4,R1 ;NO. - ADVANCE INST. POINTER (R1).
826 002356 000702 BR FULA ;BRANCH.
827 002360 004567 001274 FULJ: JSR R5,TYPE ;YES. PASS COMPLETE. RING TTY BELL AND PRINT '*'.
828 002364 025007
829 002366 005015
830 002370 057400
831 002372 005267 177262 INC PASCNT ;INCREMENT PASS COUNT SO SUBSEQUENT
832
833 002376 013700 000042 MOV #42,R0 ;PASSES WILL ITERATE
834 002402 001405 BEQ RETURN
835 002404 000005 RESET
836 002406 004710 SENDAD: JSR 7,(R0)
837 002410 000240 NOP
838 002412 000240 NOP
839 002414 000240 NOP
840 002416 000660 RETURN: BR FULMOD ;START TEST OVER
841

```

```

001-3A-8 0011-A CYCLIC REDUNDANCY CHECK TEST MACY11 27(1006) 25-OCT-76 22:42 PAGE 21
001-3A8.P11 25-OCT-76 22:40

;SELECT TEST MODE. CONTROL THE TESTING OF THE INSTRUCTION SELECTED
;ON SWRS-0 (00=ALL INSTS.) USING THE DATA WORD SELECTED ON SWR11-6.

002420 012701 001000 SELMOD: MOV #INTBEG,R1 ;INST. POINTER (R1) SET TO THE INST.
002424 016767 177170 177156 MOV OPSTAT,IFLG ;SELECTED ON SR BITS 5-0.
002432 042767 177700 177150 BIC #177700,IFLG
002440 016767 177144 177144 MOV IFLG,IFLGA
002446 001412 BEQ SELA
002450 000241 CLC
002452 006167 177132 ROL IFLG
002456 006167 177126 ROL IFLG
002462 162767 000004 177120 SUB #4,IFLG
002470 066701 177114 ADD IFLG,R1
002474 012702 001374 SELA: MOV #DATABEG,R2 ;DATA POINTER (R2) SET TO THE DATA
002500 016767 177114 177070 MOV OPSTAT,DFLG ;WORD SELECTED ON SR BITS 11-6
002506 042767 170077 177062 BIC #170077,DFLG
002514 016767 177056 177056 MOV DFLG,DFLGA
002522 001420 BEQ SELB
002524 000241 CLC
002526 006067 177044 ROR DFLG
002532 006067 177040 ROR DFLG
002536 006067 177034 ROR DFLG
002542 006067 177030 ROR DFLG
002546 006067 177024 ROR DFLG
002552 162767 000002 177016 SUB #2,DFLG
002560 066702 177012 ADD DFLG,R2
002564 004767 002154 SELB: JSR PC,CKSWR ;CHECK FOR CNTL G TO LOAD SWREG
002570 116167 000001 177042 MOV #+1(R1),SMCNT ;STEP COUNT (IF ANY) SET FOR SIMULATE.
002576 005067 177032 CLR SMBCC ;SIMULATED BCC SET TO 0.
002602 052767 000200 177034 BIS #200,SMDONE ;SET THE SIMULATED DONE BIT.
002610 004571 000002 JSR R5,3+2(R1) ;SIMULATE INST. (VIA R1) ON DATA (VIA R2).
002614 105761 000001 TSTB +1(R1) ;IS THE INST. A STEP TYPE?
002620 001413 BEQ SELD ;NO. - BRANCH.
002622 031127 004000 BIT (R1),#4000 ;YES. - IS THE INST. I10,I20,I30, OR I40?
002626 001005 BNE SELC ;YES. - BRANCH.
002630 021167 176370 CMP (R1),I46 ;NO. - IS THE INST. I46?
002634 001402 BEQ SELC ;YES. - BRANCH.
002636 005067 177002 CLR SMDONE ;NO. - CLEAR THE SIMULATED DONE BIT.
002642 004567 000102 SELC: JSR R5,TESTA ;DO TEST A (STEP INST TEST).
002646 000402 BR SELE ;BRANCH.
002650 004567 000212 SELD: JSR R5,TESTB ;NO - DO TEST B (NON-STEP INST. TEST).
002654 026777 176740 176710 SELE: CMP OPSTAT,JSWR ;HAS OPERATION STATUS (SWR SETTINGS) CHANGED?
002662 001403 BEQ SELF ;NO. - BRANCH.
002664 004567 177204 JSR R5,OPCHG ;YES. - GO SET UP NEW OPERATION STATUS.
002670 000653 BR SELMOD ;BRANCH.
002672 005767 176702 SELF: TST DFLGA ;IS DATA FLAGA NON-ZERO?
002676 001010 BNE SELH ;YES. - DATA POINTER (R2) IS FROZEN. - BRANCH.
002700 020227 001570 CMP R2,#DATEND ;NO. - HAVE ALL DATA WORDS BEEN TESTED?
002704 001403 BEQ SELG ;YES. - BRANCH.
002706 062702 000002 ADD #2,R2 ;NO. - ADVANCE DATA POINTER (R2).
002712 000724 BR SELB ;BRANCH.
002714 012702 001374 SELG: MOV #DATABEG,R2 ;DATA POINTER (R2) SET TO BEGIN OF DATA TABLE.
002720 005767 176666 SELH: TST IFLGA ;IS INST. FLAGA NON-ZERO?
002724 001317 BNE SELB ;YES. - INST. POINTER (R1) IS FROZEN (BRANCH).
002726 020127 001270 CMP R1,#INTEND ;NO. - HAVE ALL INSTS. BEEN TESTED?

```

898 002732 001403
 899 002734 062701 000004
 900 002740 000711
 901 002742 012701 001000
 902 002746 000706
 903

SELI:

BEG
 ADD
 BR
 MOV
 BR

SELI
 #4,R1
 SELB
 #INTBEG,R1
 SELB

;YES. - BRANCH.
 ;NO. - ADVANCE INST. POINTER (R1).
 ;BRANCH.
 ;INST. POINTER (R1) SET TO BEGIN OF INST. TABLE.
 ;BRANCH.

K02

904
 905
 906
 907
 908
 909
 910
 911
 912
 913
 914
 915
 916
 917
 918
 919
 920
 921
 922
 923
 924
 925
 926
 927
 928
 929
 930
 931

002750	104400		
002752	116167	000001	176672
002760	012763	000020	177776
002766	111163	177776	
002772	011263	000002	
002776	052763	000040	177776
003004	000240		
003006	016367	177776	176572
003014	011367	176564	
003020	005367	176626	
003024	001364		
003026	042767	177577	176552
003034	026767	176546	176602
003042	001004		
003044	026767	176534	176562
003052	001401		
003054	104000		
003056	005767	176520	
003062	001374		
003064	000205		

;TEST A.
 ;TEST THE INSTRUCTION POINTED AT BY R1 USING THE DATA WORD
 ;POINTED AT BY R2. (HIGH BYTE OF THE INST. WORD IS THE STEP COUNT
 ;& LOW BYTE IS THE ACTUAL INST.) THE FINAL RESULT IS STORED
 ;INTO LOC. "HBCC" TO BE COMPARED WITH THE SIMULATED RESULT
 ;WHICH HAS BEEN STORED IN LOC. "SMBCC".

TESTA:	SCOPE	;GO RECORD ENTRY TO THIS TEST.
	MOVB	+1(R1),STCNT ;SET UP STEP COUNT.
	MOV	#20,-2(R3) ;CLEAR THE BCC & THE DONE BIT.
	MOVB	(R1),-2(R3) ;MOVE INST. TO CSR.
	MOV	(R2),+2(R3) ;MOVE DATA TO DSR.
TAA:	BIS	#40,-2(R3) ;STEP (SHIFT) ONE.
	NOP	;PAUSE.
	MOV	-2(R3),HDONE ;READ & STORE CSR (DONE BIT)
	MOV	(R3),HBCC ;READ & STORE BCC.
	DEC	STCNT ;IS STEP COUNT = 0?
	BNE	TAA ;NO - BRANCH.
	BIC	#177577,HDONE ;YES. - CLEAR ALL BUT THE DONE BIT.
	CMP	HDONE,SMDONE ;HARDWARE DONE BIT = SIMULATED DONE BIT?
	BNE	TAB ;NO. - BRANCH. (ERROR)
	CMP	HBCC,SMBCC ;YES. - HARDWARE BCC = SIMULATED BCC?
	BEQ	TAC ;YES. - BRANCH.
TAB:	HLT	;NO. - TRAP TO ERROR HANDLER.
TAC:	TST	EFLG ;IS AN ERROR SCOPE LOOP RUNNING?
	BNE	TAB ;YES. - BRANCH.
	RTS	R5 ;NO. - RETURN.

L02

```

932
933      ;TEST B.
934      ;TEST THE INSTRUCTION POINTED AT BY R1 USING THE DATA WORD
935      ;POINTED AT BY R2. THE RESULT IS STORED IN LOC. "HBCC" TO BE
936      ;COMPARED WITH THE SIMULATED RESULT WHICH HAS BEEN STORED
937      ;IN LOC. "SMBCC".
938
939      003066 104400      TESTB: SCOPE      ;GO RECORD ENTRY TO THIS TEST.
940      003070 012763 000020 177776      MOV      #20,-2(R3)      ;CLEAR THE BCC.
941      003076 011163 177776      MOV      (R1),-2(R3)      ;MOVE INST. TO CSR.
942      003102 011263 000002      MOV      (R2),+2(R3)      ;MOVE DATA TO DBR (COMPUTE BCC).
943      003106 000240      NOP      ;PAUSE.
944      003110 016367 177776 176470      MOV      -2(R3),HDONE      ;READ & STORE CSR (DONE BIT)
945      003116 011367 176462      MOV      (R3),HBCC      ;READ & STORE BCC.
946      003122 032767 000200 176456      BIT      #200,HDONE      ;IS DONE BIT = 1?
947      003130 001404      BEQ      TBA      ;NO. - BRANCH. (ERROR)
948      003132 026767 176446 176474      CMP      HBCC,SMBCC      ;HARDWARE BCC = SIMULATED BCC?
949      003140 001401      BEQ      TBB      ;YES. - BRANCH.
950      003142 104000      HLT      ;NO. - TRAP TO ERROR HANDLER.
951      003144 005767 176432      TBA: TST      EFLG      ;IS AN ERROR SCOPE LOOP RUNNING.
952      003150 001374      TBB:      BNE      TBA      ;YES. - BRANCH.
953      003152 000205      RTS      R5      ;NO. - RETURN.

```

MO2

```

954
955      ;TRAP SERVICE ROUTINE (CALLED BY PSUEDO-OP HLT)
956      ;ERROR HANDLER. - TYPEOUTS - HALT - SCOPE LOOP.
957
958 003154 004767 001564      ERR: JSR PC,CKSWR      ;CHECK FOR CNTL G TO LOAD SWREG
959 003160 005767 176416      TST EFLG      ;FIRST ERR CALL FOR CURRENT TEST?
960 003164 001003      BNE ERA      ;NO. - BRANCH.
961 003166 005267 176410      INC EFLG      ;YES. - SET ERR FLAG.
962 003172 000404      BR ERA      ;BRANCH. (UNCONDITIONAL TYPE OUT).
963 003174 032767 020000 176416 ERA: BIT #20000,OPSTAT ;INHIBIT TYPE OUT?
964 003202 001002      BNE ERC      ;YES. - BRANCH.
965 003204 004567 000140      ERB: JSR R5,TYPERR ;NO. - TYPE ERR MESSAGE.
966 003210 023737 000042 000046 ERC: CMP #42,#46 ;ARE WE IN ACT11 AUTOMATIC MODE?
967 003216 001404      BEQ .+12 ;YES. HALT ON ERROR
968 003220 032777 100000 176344 BIT #100000,#SWR ;HALT ON ERR?
969 003226 001401      BEQ ERD      ;NO. - BRANCH.
970 003230 000000      HALT ;YES. - HALT HERE AND WAIT FOR OPERATOR.
971 003232 004767 001506      ERD: JSR PC,CKSWR ;CHECK FOR CNTL G TO LOAD SWREG
972 003236 027767 176330 176354 CMP #SWR,OPSTAT ;HAS OPERATION STATUS (SWR) CHANGED?
973 003244 001402      BEQ ERE      ;NO. - BRANCH.
974 003246 004567 176622      JSR R5,OPCHG ;YES - GO SET UP NEW OPERATION STATUS.
975 003252 032767 040000 176340 ERE: BIT #40000,CPSTAT ;SCOPE LOOP?
976 003260 001403      BEQ ERF      ;NO. - BRANCH.
977 003262 022626      CMP (SP)+,(SP)+ ;YES. - POP STACK
978 003264 000177 176342      JMP @SCORTN ;RETURN (SCOPE LOOP).
979 003270 005067 176306      ERF: CLR EFLG ;CLEAR ERR FLAG.
980 003274 005767 176330      TST SELFLG ;SELECT MODE?
981 003300 001001      BNE ERG      ;YES. - BRANCH.
982 003302 000002      RTI ;NO. - RETURN (CONTINUE TESTING).
983 003304 032777 000077 176260 ERG: BIT #77,#SWR ;SWR5-0 = 0?
984 003312 001410      BEQ ERH      ;YES. - BRANCH.
985 003314 032777 007700 176250 BIT #7700,#SWR ;NO. - SWR6-11 = 0?
986 003322 001404      BEQ ERH      ;YES. - BRANCH.
987 003324 062706 000006      ADD #6,SP ;NO. - POP STACK.
988 003330 000167 177064      JMP SELMOD ;RESTART AT SELMOD.
989 003334 000002      ERH: RTI ;RETURN (CONTINUE TESTING).
990
991
992
993 00333E 000005      FORCER: RESET ;FORCE AN ERROR-TYPE TYPEOUT
994 003340 004567 000004      JSR R5,TYPERR ;WHENEVER STARTED FROM LOC.210.
995 003344 000000      FEA: HALT ;THEN HALT.
996 003346 000776      BR FEA
997

```

```

998
999
1000 ;SUBROUTINE - SET UP AND TYPE THE ERROR MESSAGE THAT STARTS AT EMA.
1001 003350 105761 000001 TYPERR: TSTB +1(R1)
1002 002354 001404 BEQ TEA
1003 003356 012767 020101 000214 MOV #20101,EMC
1004 003364 000403 BR TEB
1005 003366 012767 020102 000204 TEA: MOV #20102,EMC
1006 003374 010167 176254 TEB: MOV R1,TEWK
1007 003400 162767 000774 176246 SUB #INTBEG-4,TEWK
1008 003406 006067 176242 ROR TEWK
1009 003412 006067 176236 ROR TEWK
1010 003416 042767 177700 176230 BIC #177700,TEWK
1011 003424 004567 000306 JSR R5,OTA
1012 003430 001654 TEWK
1013 003432 003606 EMF
1014 003434 000002 2
1015 003436 010267 176212 MOV R2,TEWK
1016 003442 162767 001372 176204 SUB #DATEBEG-2,TEWK
1017 003450 006067 176200 ROR TEWK
1018 003454 042767 177700 176172 BIC #177700,TEWK
1019 003462 004567 000250 JSR R5,OTA
1020 003466 001654 TEWK
1021 003470 003613 EMH+1
1022 003472 000002 2
1023 003474 004567 000236 JSR R5,OTA
1024 003500 001634 SMBCC
1025 003502 003624 EMM
1026 003504 000006 6
1027 003506 004567 000224 JSR R5,OTA
1028 003512 001604 HBCC
1029 003514 003635 EMQ+1
1030 003516 000006 6
1031 003520 112767 000061 000123 MOVB #61,EMX+1
1032 003526 032767 000200 176110 BIT #200,SMDONE
1033 003534 001003 BNE TEC
1034 003536 112767 000060 000105 MOVB #60,EMX+1
1035 003544 112767 000061 000101 MOVB #61,EMY+1
1036 003552 032767 000200 176026 BIT #200,HDONE
1037 003560 001003 BNE TED
1038 003562 112767 000060 000063 MOVB #60,EMY+1
1039 003570 004567 000064 TED: JSR R5,TYPE
1040 003574 042524 EMA: .ASCII /TE/
1041 003576 052123 EMB: .ASCII /ST/
1042 003600 020077 EMC: .ASCII /? /
1043 003602 044440 EMP: .ASCII / I/
1044 003604 037477 EME: .ASCII /??/
1045 003606 020040 EMF: .ASCII / /
1046 003610 037504 EMG: .ASCII /D?/

```

1047 003612 020077
 1048 003614 051440
 1049 003616 037477
 1050 003620 037477
 1051 003622 037477
 1052 003624 020040
 1053 003626 037510
 1054 003630 037477
 1055 003632 037477
 1056 003634 020077
 1057 003636 042040
 1058 003640 047117
 1059 003642 020105
 1060 003644 044502
 1061 003646 035124
 1062 003650 037440
 1063 003652 037534
 1064 003654 057536
 1065 003656 000205

EMH: .ASCII /?/
 EMI: .ASCII /S/
 EMJ: .ASCII /?/
 EMK: .ASCII /?/
 EML: .ASCII /?/
 EMM: .ASCII / /
 EMN: .ASCII /H?/
 EMO: .ASCII /?/
 EMP: .ASCII /?/
 EMQ: .ASCII /? /
 EMR: .ASCII /D/
 EMS: .ASCII /ON/
 EMU: .ASCII /E /
 EMV: .ASCII /BI/
 EMW: .ASCII /T: /
 EMX: .ASCII /? /
 EMY: .ASCII /\? /
 EMZ: .ASCII /\+ /
 RTS RS

```

1066
1067
1068
1069
1070
1071 003660 105767 173700
1072 003664 100375
1073 003666 121527 000136
1074 003672 001005
1075 003674 105725
1076 003676 004567 177756
1077 003702 005015
1078 003704 000137
1079 003706 121527 000137
1080 003712 001403
1081 003714 112567 173646
1082 003720 000757
1083 003722 105725
1084 003724 032705 000001
1085 003730 001401
1086 003732 005205
1087 003734 000205

```

```

:SUBROUTINE - TYPE ON THE TTY THE MESSAGE IMMEDIATELY FOLLOWING
:THE CALL TO THIS SUBROUTINE. UP-ARROW (^) CAUSES A CRLF AND BACK-ARROW
: (^) CAUSES TERMINATION OF TYPEOUT. RETURN WILL BE TO THE INSTRUCTION
:FOLLOWING THE MESSAGE.

```

```

TYPE:  TSTB  TPCSR
        BPL   TYPE
        CMPB  (R5), #136
        BNE   TPA
        TSTB  (R5)+
        JSR   RS, TYPE
        005015
        000137
TPA:    CMPB  (R5), #137
        BEQ   TPB
        MOVB  (R5)+, TPDBR
        BR    TYPE
TPB:    TSTB  (R5)+
        BIT   #1, R5
        BEQ   TPC
        INC   RS
TPC:    RTS   RS

```

1088
1089
1090
1091
1092
1093
1094
1095
1096
1097
1098
1099
1100
1101
1102
1103
1104
1105
1106
1107
1108
1109
1110
1111
1112
1113

:SUBROUTINE - OCTAL TO ALPHA CONVERSION ACCORDING TO THE THREE WORDS
 :IMMEDIATELY FOLLOWING THE CALL TO THIS SUBROUTINE. THE FIRST WORD POINTS
 :AT THE WORD TO BE CONVERTED. THE SECOND WORD POINTS AT THE STARTING
 :LOC. WHERE THE RESULT IS TO BE MOVED. THE THIRD WORD IS THE NUMBER
 :OF CHARACTERS TO BE CONVERTED AND MOVED. RETURN WILL BE TO THE
 :INSTRUCTION FOLLOWING THESE THREE WORDS.

003736	013567	175662	OTA:	MOV	2(R5)+,OTAWKA
003742	012504			MOV	(R5)+,R4
003744	012567	175652		MOV	(R5)+,OTACNT
003750	016767	175650	OTALA:	MOV	OTAWKA,OTAWKB
003756	000241			CLC	
003760	006067	175640		ROR	OTAWKA
003764	000241			CLC	
003766	006067	175632		ROR	OTAWKA
003772	000241			CLC	
003774	006067	175624		ROR	OTAWKA
004000	042767	177770	175620	BIC	#177770,OTAWKB
004006	052767	000060	175612	BIS	#60,OTAWKB
004014	116744	175606		MOVB	OTAWKB,-(R4)
004020	005367	175576		DEC	OTACNT
004024	001351			BNE	OTALA
004026	000205			RTS	R5

```

1114
1115
1116
1117 004030 011667 175576
1118 004034 004767 000704
1119 004040 000002
1120
1121
1122
1123 004042 000002
1124

```

;TRAP SERVICE ROUTINE - SCOPE = TRAP.
 SCORCD: MOV (SP), SCORTN ;SAVE THE STARTING LOC. OF TESTA OR TESTB.
 JSR PC,CKSWR ;CHECK FOR CNTL G TO LOAD SWREG
 RTI ;RETURN.
 ;TRAP SERVICE ROUTINE - "T" BIT SET =TRAP.
 TRTRTN: RTI ;GOOD BOY, NOW RETURN.

F03

```

1125      .SUBROUTINE - SIMULATE ALL MODES OF LRC
1126      004044 012767 000010 175556 SMLRCA: MOV    #10, SMCNT      ;ENTRY LRC16 DOUBLE BYTE DATA.
1127      004052 062767 000010 175560 SMLRCB: ADD    #10, SMCNT      ;ENTRY LRC16 SINGLE BYTE DATA.
1128      004060 C42767 100000 000070 SMLRCC: BIC    #100000, SMLRCJ ;ENTRY STEP LRC16.
1129      004066 000411          SMLRCG: BR      SMLRCG
1130      004070 012767 000010 175542 SMLRCD: MOV    #10, SMCNT      ;ENTRY LRC8 DOUBLE BYTE DATA.
1131      004076 062767 000010 175534 SMLRCE: ADD    #10, SMCNT      ;ENTRY LRC8 SINGLE BYTE DATA.
1132      004104 052767 100000 000044 SMLRCF: BIS    #100000, SMLRCJ ;ENTRY STEP LRC8.
1133      004112 005767 175522          SMLRCG: TST    SMCNT
1134      004116 001002          SMLRCH: BNE    SMLRCH
1135      004120 005267 175514          SMLRCH: INC    SMCNT
1136      004124 016767 175504 175504 SMLRCH: MOV    SMBCC, SMBCCA
1137      004132 011267 175504          SMLRCH: MOV    (R2), SMDATA
1138      004136 016767 175472 175502 SMLRCI: MOV    SMBCC, SMWKA
1139      004144 066767 175472 175474          SMLRCI: ADD    SMDATA, SMWKA
1140      004152 006067 175470          SMLRCI: ROR    SMWKA
1141      004156 006067 175452          SMLRCJ: ROR    SMBCC      ;INSTR. MODIFIED: LRC16=ROR LRC8=RORB.
1142      004162 000241          SMLRCJ: CLC
1143      004164 006067 175452          SMLRCJ: ROR    SMDATA
1144      004170 005367 175444          SMLRCJ: DEC    SMCNT
1145      004174 001360          SMLRCI: BNE    SMLRCI
1146      004176 000205          SMLRCI: RTS
1147

```

```

1148
1149
1150
1151      ;SUBROUTINE - SIMULATE ALL MODES OF CRC16.
1152 004200 012767 000010 175432 SMC16A: MOV      #10, SMCNT      ;ENTRY CRC16 DOUBLE BYTE DATA.
1153 004206 062767 000010 175424 SMC16B: ADD      #10, SMCNT      ;ENTRY CRC16 SINGLE BYTE DATA.
1154 004214 005767 175420 SMC16C: TST      SMCNT      ;ENTRY STEP CRC16.
1155 004220 001002          BNE      SMC16D
1156 004222 005267 175412          INC      SMCNT
1157 004226 016767 175402 175402 SMC16D: MOV      SMBCC, SMBCCA
1158 004234 011267 175402          MOV      (R2), SMDATA
1159 004240 016767 175370 175400 SMC16E: MOV      SMBCC, SMWKA
1160 004246 066767 175370 175372          ADD      SMDATA, SMWKA
1161 004254 000241          CLC
1162 004256 006067 175352          ROR      SMBCC
1163 004262 000241          CLC
1164 004264 006067 175352          ROR      SMDATA
1165 004270 006067 175352          ROR      SMWKA
1166 004274 103014          BCC      SMC16F
1167 004276 012767 120001 175342          MOV      #120001, SMWKA
1168 004304 046767 175324 175334          BIC      SMBCC, SMWKA
1169 004312 042767 120001 175314          BIC      #120001, SMBCC
1170 004320 066767 175322 175306          ADD      SMWKA, SMBCC
1171 004326 005367 175306 SMC16F: DEC      SMCNT
1172 004332 001342          BNE      SMC16E
1173 004334 000205          RTS      R5
1174
1175      ;SUBROUTINE - SIMULATE ALL MODES OF CCITT.
1176
1177 004336 012767 000010 175274 SMCITA: MOV      #10, SMCNT      ;ENTRY CCITT DOUBLE BYTE DATA.
1178 004344 062767 000010 175266 SMCITB: ADD      #10, SMCNT      ;ENTRY CCITT SINGLE BYTE DATA.
1179 004352 005767 175262 SMCITC: TST      SMCNT      ;ENTRY STEP CCITT.
1180 004356 001002          BNE      SMCITD
1181 004360 005267 175254          INC      SMCNT
1182 004364 016767 175244 175244 SMCITD: MOV      SMBCC, SMBCCA
1183 004372 011267 175244          MOV      (R2), SMDATA
1184 004376 016767 175232 175242 SMCITE: MOV      SMBCC, SMWKA
1185 004404 066767 175232 175234          ADD      SMDATA, SMWKA
1186 004412 000241          CLC
1187 004414 006067 175214          ROR      SMBCC
1188 004420 000241          CLC
1189 004422 006067 175214          ROR      SMDATA
1190 004426 006067 175214          ROR      SMWKA
1191 004432 103014          BCC      SMCITF
1192 004434 012767 102010 175204          MOV      #102010, SMWKA
1193 004442 046767 175166 175176          BIC      SMBCC, SMWKA
1194 004450 042767 102010 175156          BIC      #102010, SMBCC
1195 004456 066767 175164 175150          ADD      SMWKA, SMBCC
1196 004464 005367 175150 SMCITF: DEC      SMCNT
1197 004470 001342          BNE      SMCITE
1198 004472 000205          RTS      R5
1199
1200      ;SUBROUTINE - SIMULATE ALL MODES OF CRC12.
1201
1202 004474 012767 000006 175136 SMC12A: MOV      #6, SMCNT      ;ENTRY CRC12 SINGLE BYTE DATA.
1203 004502 005767 175132 SMC12B: TST      SMCNT      ;ENTRY STEP CRC12.

```

H03

1204	004506	001002			BNE	SMC12C
1205	004510	005267	175124		INC	SMCNT
1206	004514	016767	175114	175114	SMC12C: MOV	SMBCC, SMBCCA
1207	004522	011267	175114		MOV	(R2), SMDATA
1208	004526	016767	175102	175112	SMC12D: MOV	SMBCC, SMWKA
1209	004534	066767	175102	175104	ADD	SMDATA, SMWKA
1210	004542	106367	175066		ASLB	SMBCC
1211	004546	106367	175062		ASLB	SMBCC
1212	004552	006067	175056		ROR	SMBCC
1213	004556	106067	175052		RORB	SMBCC
1214	004562	106067	175046		RORB	SMBCC
1215	004566	042767	160000	175040	BIC	#160000, SMBCC
1216	004574	006067	175046		ROR	SMWKA
1217	004600	103014			BCC	SMC12E
1218	004602	012767	036001	175036	MOV	#36001, SMWKA
1219	004610	046767	175020	175030	BIC	SMBCC, SMWKA
1220	004616	042767	036001	175010	BIC	#36001, SMBCC
1221	004624	066767	175016	175002	ADD	SMWKA, SMBCC
1222	004632	000241			SMC12E: CLC	
1223	004634	006067	175002		ROR	SMDATA
1224	004640	005367	174774		DEC	SMCNT
1225	004644	001330			BNE	SMC12D
1226	004646	000205			RTS	R5

```

1227
1228
1229
1230      ; SWITCH REGISTER SIZING ROUTINE
1231 004650 013746 000006      SUSWR: MOV    @#6,-(SP)      ;SAVE VECTORS
1232 004654 013746 000004      MOV    @#4,-(SP)
1233 004660 012737 004700 000004      MOV    @#4,@#4      ;SET UP FOR TIMEOUT
1234 004666 022777 177777 174676      CMP    #-1,@SWR      ;REFERENCE HARDWARE SWITCH REGISTER
1235 004674 001402      BEQ    65$
1236 004676 000404      BR     66$
1237 004700 022626      64$: CMP    (SP)+(SP)+      ;ADJUST STACK
1238 004702 012767 000176 174662      65$: MOV    #SWREG,SWR      ;POINT TO SOFTWARE SWITCH REG
1239 004710 012637 000004      66$: MOV    (SP)+,@#4      ;RESTORE VECTORS
1240 004714 012637 000006      MOV    (SP)+,@#6
1241 004720 022767 000176 174644      CMP    #SWREG,SWR      ;IS SWREG USED
1242 004726 001002      BNE    67$
1243 004730 004767 000070      JSR    PC,CNTLU      ;ALLOW SWREG TO BE LOADED
1244 004734 000207      67$: RTS    PC
1245
1246
1247      ; CHECK SWITCH REGISTER ROUTINE. CHECKS FOR IG TO ALLOW CHANGING
1248      ; OF LOC.176.
1249      ; LOCATIONS USED:
1250 004736 000000      TEMPST: .WORD 0
1251 004740 000000      COUNT: .WORD 0
1252 004742 000000      TIB:    .WORD 0
1253
1254
1255 004744 022767 000176 174620 CKSWR: CMP    #SWREG,SWR      ;SOFTWARE SWITCH REGISTER PRESENT
1256 004752 001143      BNE    OUT      ;NO GET OUT
1257 004754 105767 172600      TSTB   TKCSR      ;YES, WAIT FOR
1258 004760 100140      BPL     OUT      ;READY, GET CHARACTER
1259 004762 016767 172574 177752      MOV    TKDBR,TIB      ;AND STRIP OFF
1260 004770 042767 177600 177744      BIC    #177600,TIB      ;THE GARBAGE
1261 004776 022767 000007 177736      CMP    #7,TIB      ;IS IT ^ (IG)
1262 005004 001126      BNE    OUT
1263 005006 004567 176646      JSR    RS,TYPE      ;TYPE CNTL G
1264 005012 041536 052116 020114      .ASCII /CNTL G+//
1265 005020 057107 137
1266      .EVEN
1267 005024 004567 176706      CNTLU: JSR    RS,OTA      ;MOVE CONTENTS
1268 005030 000176      SWREG      ;OF SWREG TO BE
1269 005032 005055      MSWREG      ;TYPED FOLLOWING
1270 005034 000006      6      ;THE MESSAGE SWR=
1271 005036 004567 176616      JSR    RS,TYPE      ;TYPE THE COMPLETE MESSAGE
1272
1273 005042 051536 051127 075      MSWR: .ASCII /+SWR=/      ;SWR=
1274 005047 077 037477 037477      .ASCII /?????/?/      ;XXXXXX
1275 005054 077
1276 005055 040 020040 020040      MSWREG: .ASCII / /
1277 005062 040
1278 005063 040 042516 036527      MNEW: .ASCII / NEW= +/      ; NEW=
1279 005070 057440
1280
1281      .EVEN

```

J03

1282	005072	005067	177640		\$READ:	CLR	TEMPST	
1283	005076	012767	000007	177634		MOV	#7,COUNT	
1284	005104	004767	000154		1\$:	JSR	PC,TIN	;GO READ A CHARACTER
1285	005110	042767	177600	177624		BIC	#177600,TIB	;STRIP OFF GARBAGE
1286	005116	122767	000025	177616		CMPB	#25,TIB	;IS IT A 'U'?
1287	005124	001001				BNE	2\$	;BRANCH IF NOT
1288	005126	000736			3\$:	BR CNTLU		;START OVER
1289	005130	122767	000015	177604	2\$:	CMPB	#15,TIB	;IS IT A '<CR>'?
1290	005136	001010				BNE	4\$	;BRANCH IF NOT
1291	005140	004567	176514			JSR	R5,TYPE	;TYPE LF,CR
1292	005144	057536				.ASCII	/↑+//	
1293	005146	022767	000007	177564		CMP	#7,COUNT	;WAS IT FIRST CHARACTER
1294	005154	001036				BNE	7\$	;CHANGE SWR IF NOT FIRST ONE
1295	005156	000441			8\$:	BR	OUT	;GET OUT
1296	005160	122767	000060	177554	4\$:	CMPB	#60,TIB	
1297	005166	003004				BGT	5\$	
1298	005170	122767	000067	177544		CMPB	#67,TIB	
1299	005176	002005				BGE	6\$	
1300	005200	004567	176454		5\$:	JSR	R5,TYPE	
1301	005204	037536	057536			.ASCII	/↑↑↑+//	
1302	005210	000746				BR	3\$	;START OVER IF NOT LEGAL CHARACTER
1303	005212	006367	177520		6\$:	ASL	TEMPST	
1304	005216	006367	177514			ASL	TEMPST	
1305	005222	006367	177510			ASL	TEMPST	
1306	005226	142767	000060	177506		BICB	#60,TIB	;GET NITTY-GRITTY
1307	005234	156767	177502	177474		BISB	TIB,TEMPST	
1308	005242	005367	177472			DEC	COUNT	;ONLY WANT 6 DIGITS
1309	005246	001754				BEQ	5\$	
1310	005250	000715				BR	1\$	
1311	005252	016777	177460	174312	7\$:	MOV	TEMPST,2SWR	;CHANGE SWITCH REGISTER CONTENTS
1312	005260	000736				BR	8\$	
1313	005262	000207			OUT:	RTS	PC	;RETURN TO PROGRAM

K03

024GA-B K011-A CYCLIC REDUNDANCY CHECK TEST MACY11 27(1006) 25-OCT-76 22:42 PAGE 36
02KGA8.P11 25-OCT-76 22:40

```
1314
1315
1316
1317 005264 005067 172270
1318 005270 005067 172266
1319 005274 005067 177442
1320 005300 005267 172254
1321 005304 105767 172250
1322 005310 100375
1323 005312 016767 172244 177422
1324 005320 105767 172240
1325 005324 100375
1326 005326 116767 177410 172232
1327 005334 000207
1328
1329 000001

;TTY INPUT SUBROUTINE*****
TTIN: CLR TKCSR
      CLR TKDBR
      CLR TIB
      INC TKCSR
TTIN1: TSTB TKCSR
      BPL TTIN1
      MOV TKDBR,TIB
TTIN2: TSTB TPCSR
      BPL TTIN2
      MOVB TIB,TPDBR
      RTS PC
      .END
```

L03

CKSWR	004744	D56	001526	FEA	003344	I32	001144	PASCNT	001660
CNTLU	005024	D57	001530	FORCER	003336	I33	001150	PS =	177776
COJNT	004740	D60	001532	FORERR	000210	I34	001154	RETURN	002416
DATBEG=	001374	D61	001534	FTITLE	001656	I35	001160	R7 =	%000007
DATEND=	001570	D62	001536	FULA	002164	I36	001164	SCOPE =	104400
DEVADR	001574	D63	001540	FULB	002170	I37	001170	SCORCD	004030
DFLG	001576	D64	001542	FULC	002220	I40	001174	SCORTN	001632
DFLGA	001600	D65	001544	FULD	002246	I41	001200	SELA	002474
D01	001374	D66	001546	FULE	002254	I42	001204	SELB	002564
D02	001376	D67	001550	FULF	002260	I43	001210	SELC	002642
D03	001400	D70	001552	FULG	002276	I44	001214	SELD	002650
D04	001402	D71	001554	FULH	002330	I45	001220	SELE	002654
D05	001404	D72	001556	FULI	002344	I46	001224	SELECT	000204
D06	001406	D73	001560	FULJ	002360	I47	001230	SELF	002672
D07	001410	D74	001562	FULMOD	002160	I50	001234	SELFLG	001630
D10	001412	D75	001564	HBCC	001604	I51	001240	SELG	002714
D11	001414	D76	001566	HDONE	001606	I52	001244	SELH	002720
D12	001416	D77	001570	HLT =	104000	I53	001250	SELI	002742
D13	001420	EFLG	001602	IDENT	001662	I54	001254	SELMOD	002420
D14	001422	EMA	003574	IFLG	001610	I55	001260	SMBCC	001634
D15	001424	EMB	003576	IFLGA	001612	I56	001264	SMBCCA	001636
D16	001426	EMC	003600	INIT	002010	I57	001270	SMCITA	004336
D17	001430	EMD	003602	INTA	002016	I60	001274	SMCITB	004344
D20	001432	EME	003604	INTB	002022	I61	001300	SMCITC	004352
D21	001434	EMF	003606	INTBEG=	001000	I62	001304	SMCITD	004364
D22	001436	EMG	003610	INTEND=	001270	I63	001310	SMCITE	004376
D23	001440	EMH	003612	ITACNT	001614	I64	001314	SMCITF	004464
D24	001442	EMI	003614	ITANO	001616	I65	001320	SMCNT	001640
D25	001444	EMJ	003616	I01	001000	I66	001324	SMC12A	004474
D26	001446	EMK	003620	I02	001004	I67	001330	SMC12B	004502
D27	001450	EML	003622	I03	001010	I70	001334	SMC12C	004514
D30	001452	EMM	003624	I04	001014	I71	001340	SMC12D	004526
D31	001454	EMN	003626	I05	001020	I72	001344	SMC12E	004632
D32	001456	EMO	003630	I06	001024	I73	001350	SMC16A	004200
D33	001460	EMP	003632	I07	001030	I74	001354	SMC16B	004206
D34	001462	EMQ	003634	I10	001034	I75	001360	SMC16C	004214
D35	001464	EMR	003636	I11	001040	I76	001364	SMC16D	004226
D36	001466	EMS	003640	I12	001044	I77	001370	SMC16E	004240
D37	001470	EMU	003642	I13	001050	MNEW	005063	SMC16F	004326
D40	001472	EMV	003644	I14	001054	MSWR	005042	SMDATA	001642
D41	001474	EMW	003646	I15	001060	MSWREG	005055	SMDONE	001644
D42	001476	EMX	003650	I16	001064	NOP =	000240	SMLRCA	004044
D43	001500	EMY	003652	I17	001070	NORMAL	000200	SMLRCB	004052
D44	001502	ERZ	003654	I20	001074	OPCA	002126	SMLRCC	004060
D45	001504	ERA	003174	I21	001100	OPCB	002156	SMLRCD	004070
D46	001506	ERB	003204	I22	001104	OPCHG	002074	SMLRCE	004076
D47	001510	ERC	003210	I23	001110	OPSTAT	001620	SMLRCF	004104
D50	001512	ERD	003232	I24	001114	OTA	003736	SMLRCG	004112
D51	001514	ERE	003252	I25	001120	OTACNT	001622	SMLRCH	004124
D52	001516	ERF	003270	I26	001124	OTALA	003750	SMLRCI	004136
D53	001520	ERG	003304	I27	001130	OTAWKA	001624	SMLRCJ	004156
D54	001522	ERH	003334	I30	001134	OTAWKB	001626	SMWKA	001646
D55	001524	ERR	003154	I31	001140	OUT	005262	SMWKB	001650

M03

DZKGA-B KGI1-A CYCLIC REDUNDANCY CHECK TEST MACY11 27(1006) 25-OCT-76 22:42 PAGE 39
 DZKGAB.P11 25-OCT-76 22:40 SYMBOL TABLE

STONT	001652	TBA	003142	TESTA	002750	TPB	003722	TTIN2	005320
SUSWR	004650	TBB	003144	TESTB	003066	TPC	003734	TYPE	003660
SWR	001572	TEA	003366	TEWK	001654	TPCSR =	177564	TYPERR	003350
SWREG	000176	TEB	003374	TIB	004742	TPDBR =	177566	\$ENDAD	002406
*AA	002776	TEC	003544	TKCSR =	177560	TRTRTN	004042	\$READ	005072
*AB	003054	*ED	003570	TKDBR =	177562	TTIN	005264	.	= 005336
*AC	003056	TEMPST	004736	TPA	003706	TTIN1	005304		

. ABS. 005336 000

ERRORS DETECTED: 0
 DEFAULT GLOBALS GENERATED: 0

DSKZ:DZKGAB,DSKZ:DZKGAB/SOL=DSKZ:DZKGAB.P11
 RUN-TIME: 4 9 1 SECONDS
 RUN-TIME RATIO: 145/14=10.0
 CORE USED: SK (9 PAGES)