

SHEET 766 REVISION 1

SB-10163

MAIN MEMORY TEST

This program tests the ability of the Main Memory section to accept and retain various bit configurations. This is accomplished by loading and evaluating a series of patterns which range in complexity from the simplest to two patterns generating the maximum amount of noise in the core sense windings. These patterns include a worst pattern, a random number generator, a read/write test and pattern test consisting of hold l's, hold O's, alternate l's and O's and alternate O's and l's. Each pattern is loaded and evaluated within a subroutine which is under the control of an executive routine. In addition, an addressing structure test is included which is also under control of the executive.

The entire main memory is tested as follows: The program is loaded into back O and tests bank l. Then the program transfers the entire contents of bank O to bank l and tests the next allowed bank, etc. When the program has completed testing the highest numbered bank in the computer, it transfers itself and the contents of the bank it is in, to that bank and tests bank O. Then the program transfers itself and the contents of the bank it is in to bank O and the cycle is repeated. This program is written for an 1219. The following Computer Size table shows the appropriate indices that must be entered into AU and AL before the program is initiated.

COMPUTER SIZE TABLE

Main Memory Size	Set AU to:	Control Memory Size	Set AL bits
			2-0 to:
8192 16384 24576 32768 40960 49152 57344 65536	000000 000001 000002 000003 000004 000005 000006 000007	· 128 256	0 1

The operator has the option of selecting either or both a computer console error display or an error typeout. If PROGRAM STOP 0 is set and an error is detected, the test will stop and display the correct pattern in AU and the incorrect pattern in AL. Upon restarting, the test will stop with the failing address in AL. If PROGRAM SKIP 4 is not set Typeout Subroutines will provide the operator with a typeout of the status of the Main Memory Test. If an error is detected and PROGRAM SKIP 4 is not set, the failing address and the correct and incorrect patterns will be buffered out.



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SPECIFICATION SYMBOL SB-10163

The Main Memory Test may be run separately or as part of the Integrated Memory Test. If it is run separately PROGRAM SKIP 2 must be set to remain in the MAIN MEMORY TEST. The following is the operating procedure for the MAIN MEMORY TEST:

- a. Disconnect the RTC.
 - b. Load the MAIN MEMORY TEST PROGRAM. The jumps and stops for this program are as specified in the following table:

PROGRAM SWITCH	PROGRAM ACTION
PROGRAM SKIP 0 PROGRAM SKIP 1 PROGRAM SKIP 2 PROGRAM SKIP 4 PROGRAM STOP 0 PROGRAM STOP 1 PROGRAM STOP 2 PROGRAM STOP 3	Set to recycle a continuously failing test subroutine (See note) Set to retest the current bank Set to remain in the Main Memory Test Set to supress typeouts Set for computer console error display Set to end test in current bank Set to stop after error typeout Set to stop after a selected number of complete cycles of the Main Memory Test are completed. (The number -1 in address NUMB) This stop is used with typeouts only.

NOTE: This skip, PROGRAM SKIP 0, will result in recycling only if the test fails each time it is run. Therefore use PROGRAM SKIP 1 when using PROGRAM SKIP 0.

- c. Set PROGRAM SKIPS and STOPS as desired according to the above table.
- d. Master Clear and Computer.
- e. Set AU and AL Bits 2-0 to the appropriate size indices as found in the Computer Size Table.
- f. Set the 1232/1532 channel number in AL bits 6 to 3.
- q. Set AL bit 8 if the I/O Console is a 1532.
- h. Set AL bits 17-15 as follows:

Set bit 17 if computer is in 1218 normal mode. Set bit 16 if computer is in 1218 NTDS mode. Set bit 15 if computer is in 1219 normal mode.

i. Insert (if necessary) the plug-in printed wiring assembly 7104010 in the location specified as follows:

A4AlJ5G if computer is in 1218 normal mode. A4AlJ5F if computer is in 1218 NTDS mode. A4AlJ4G if computer is in 1219 normal mode.

- j. Set P = 03700.
- k. Start the Computer.



SPECIFICATION SHEET

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SPECIFICATION SYMBOL SB-10163

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PROGRAM DATA PAGE

SHEET 769 REVISION

SPECIFICATION SYMBOL SB-10163

TITLE:	CRANK	1219	MAIN	MEMORY	TEST	INITIAL	.IZATION	AND !	MONITOR
DECK	IDENTIFIER: _	FACT							
CS-1	LABEL: CRANK	<		KEY:		IS LAE	BEL DUPLI	CATE?	No
PROG	RAMMER: HW.	M mod	ified	by TLR		DATE:	8 Dec.	67	
NUMB	ER OF L4 C	UTPUT	INST	RUCTIONS	S:85	ō			

DESCRIPTION:

This routine, CRANK, initializes and monitors the 1219 Main Memory test.

CRANK is one of a series of routines comprising the 1219 Main Memory test. The Main Memory test, tests all memory except wired and control memory, by loading and verifying the following patterns: all zeroes, all ones, alternating ones and zeros, alternating zeroes and ones, worst pattern, complement worst pattern, and random word pattern.

Before CRANK is initiated AU and AL are manually set to appropriate indices for control and main memory size. Upon initiation, the program uses these indices to set memory size parameters. Then the program size is calculated and stored as a reference for the program transfer routine, RSET. PROGRAM SKIP 4 is referenced. If set, routine TESTS is entered. If not set, MEMORY TEST is printed. The number of cycles completed by the Main Memory test is referenced. If 10 cycles are not completed the Main Memory test is cycled again. If 10 cycles are completed a flag is checked to determine if any errors occurred during the test. If no errors occurred, END 10 CYCLES, is printed. Then PROGRAM STOP 3 is referenced for the end of the Main Memory test. If PROGRAM STOP 3 is not set, PROGRAM SKIP 2 is referenced. If not set an exit to the Integrated Test Executive will be made. If set the Memory Test is continued. If errors occurred during the 10 cycle run RECYCLE is printed and PROGRAM SKIP 2 is referenced as explained above.

Routine CRANK is entered at address TRACK from routine RSET after the memory test program is running.

PROGRAM DATA PAGE (Cont)

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SPECIFICATION SYMBOL SB-10163

TITLE: CRANK - 1219 B MAIN MEMORY TEST INITIALIZATION AND MONITOR

INPUT PARAMETERS (Listed Sequentially):

AU and AL entered manually

JVW

JVWl

BAER

BANKl

OUTPUT PARAMETERS (Listed Sequentially):

WIRE3

Buffer PC

BLMN

Buffer MEM-MEMO+3

BAER

PAR

RWEX3

Buffer END-END+5

PARl

TOTAL

Buffer BUN-BUN+3

ABNORMAL EXITS (Listed Sequentially):

NEXT LEVEL PROCEDURES OR SUBROUTINES (Keys of Duplicate Labels Specified):

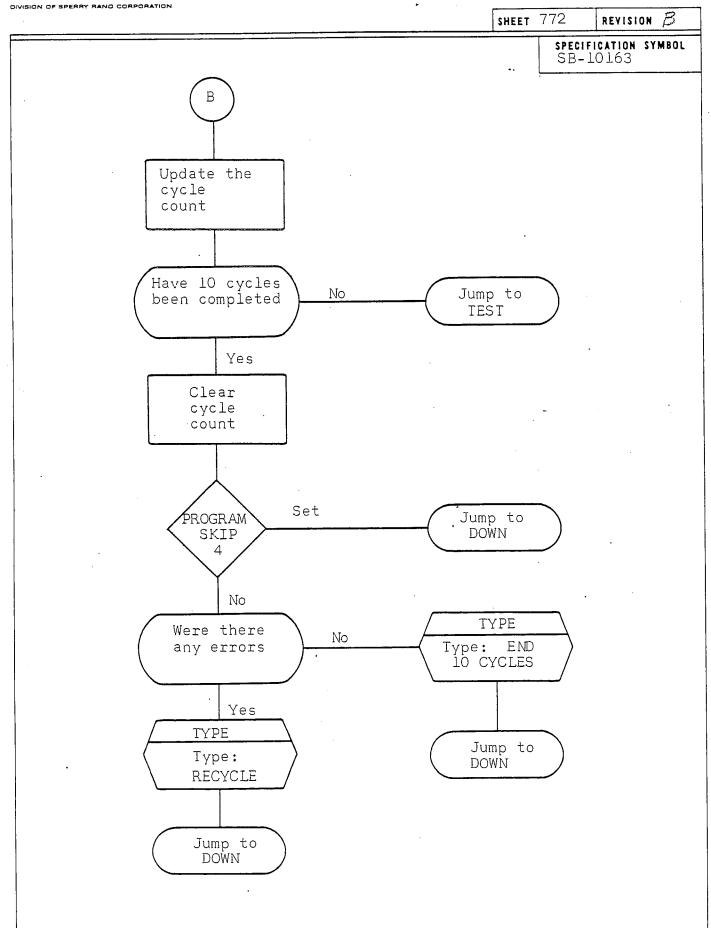
SYSTEM DATA REFERENCES:

ALARMS AND/OR REMARKS:



SHEET REVISION 771 SPECIFICATION SYMBOL SB-10163 CRANK Set ICR to one Store, AU and TYPT AL, the size indexes of con-Print: trol and main memory MAIN MEMORY TEST TYPE Setup channel number, 1232/ В 1532 interchange N+1 BUFFER TERM INATION Y IOSET MODIFY BCW FOR N+1 BUF-Prepare to test bank FER TERMINAl initially NOIT Determine and store program size Modify program according to main memory size Program N Skip 4 Modify program according to control memory Jump to TEST size CRANK







REVISION **SHEET** 773 SPECIFICATION SYMBOL SB-10163 DOWN Set PROGRAM END TEST STOP No Exit to In-tegrated Memory Executive ИО PROGRAM SKIP Set Jump to B

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PROGRAM DATA PAGE

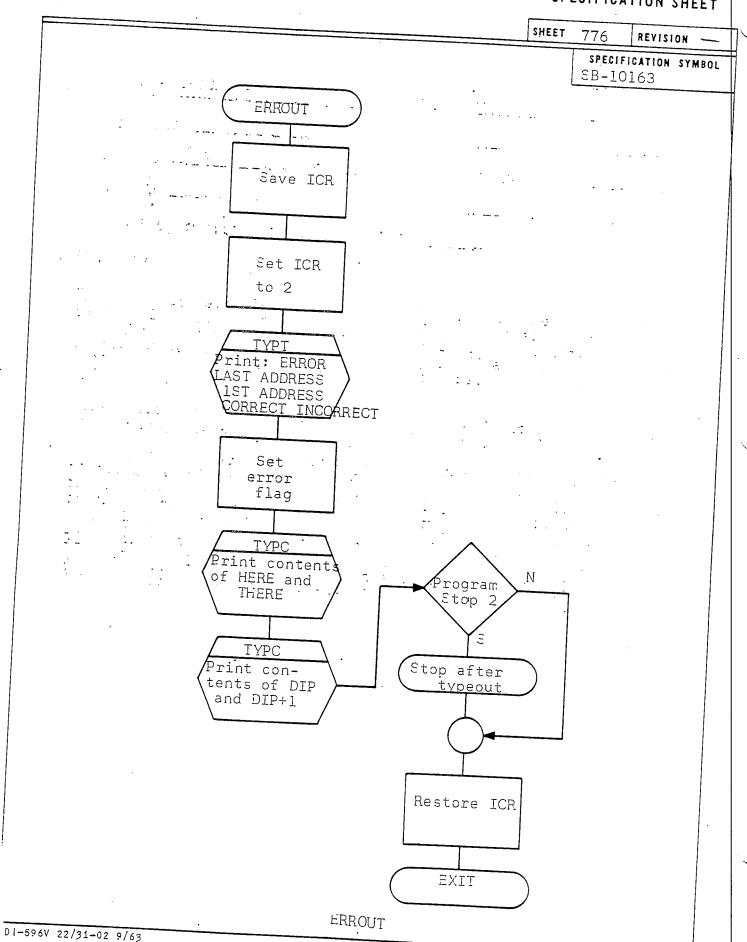
CHEET 774 REVISION

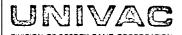
SB-10163

TITLE:	ERROUT - ERROR TY	PEOUT				_
DECK	IDENTIFIER FACT					• —
	LABÉL, ÉBROUT	Key.		DUPLICA	IE? No.	
PROG	RAMMER HWM modifie	d by ILR	PATE	8 Dec	67	
NUMB	ER OF LA OUTPUT INST		.59	**		
DESC	RIPTIONA	Tage To garage				
This	subroutine, ERROUT,	types out t	he followi	ng error	: indication	inc
	error 1st address XXXXX	LAST ADDRE	SS CORRE		CORRECT CXXXXX	:

After the typeout PROGRAM STOP 2 is referenced for the end of the Main Memory test. This routine, ERROUT, is referenced by the following routines: PROOF, WPL, CWPL and RW.

Upon entering ERROUT the current ICR is stored and reset to 2. An error flag is set. The typeout is done in the format shown above and PROGRAM STOP 2 is referenced for end of test. The ICR is restored to its original value and an exit from ERROUT is made:





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SPECIFICATION SYMBOL SB-10163

TITLE: WIRE - CHECK FOR	WIRED AND CONT	ROL MEMORY		
DECK IDENTIFIER: FACT				·
CS-1 LABEL: WIRE	KEY:	IS LABEL	DUPLICATE?	No
PROGRAMMER: HWM modi	fied by TLR	DATE:	8 Dec	67
NUMBER OF L4 OUTPUT I	NSTRUCTIONS:	27		·
DESCRIPTION:				•

This subroutine, WIRE, checks the address of the memory location, in Bank O, about to be loaded or verified to determine if it is in either control or wired memory. If it is in either, this routine makes appropriate modifications. If any bank other than zero is being tested control is promptly returned to the routine referencing WIRE:

This subroutine, WIRE, is referenced by the following routines: TEST, PROOF, HD1, HALT, HALTO, WP1, CWP1, RW1 and FLUSH1.

When WIRE is entered the value of the current index register is stored because its value equals the address about to be loaded or verified. Then the following checks are made on B, the value of the current index register. If $B \ge 700_8$ an exit is made from WIRE. If $B = 200_8$ it is set to 300_8 and an exit is made from WIRE. If $B = 500_8$ it is set to 540_8 and an exit is made from WIRE. If the control memory includes 256 addresses and $B = 400_8$ it is set to 540_8 and an exit is made from WIRE. If $B = 600_8$ it is set to 700_8 and an exit is made from WIRE.

PROGRAM DATA PAGE (Cont)

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SPECIFICATION SYMBOL SB-10163

TITLE: WIRE - CHECK FOR WIRED AND CONTROL MEMORY

INPUT PARAMETERS (Listed Sequentially):

The value of the current index register WIRE3

OUTPUT PARAMETERS (Listed Sequentially):

The modified or unmodified value of the current index register

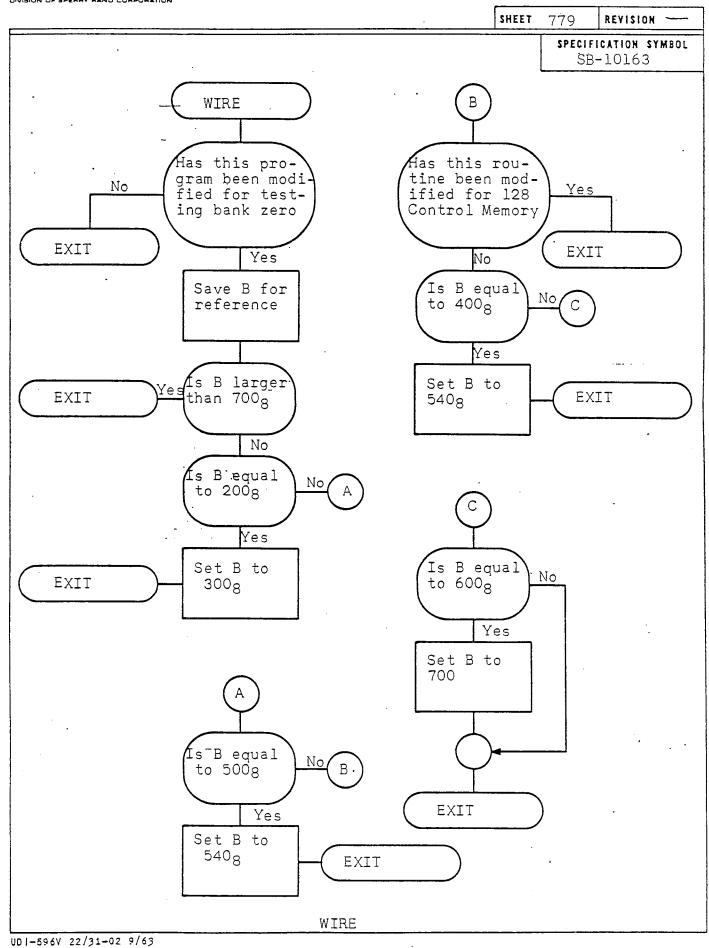
ABNORMAL EXITS (Listed Sequentially):

NEXT LEVEL PROCEDURES OR SUBROUTINES (Keys of Duplicate Labels Specified):

SYSTEM DATA REFERENCES:

ALARMS AND/OR REMARKS:







SHEET 780 REVISION

SPECIFICATION SYMBOL SB-10163

TITLE: TYPE - SETUP CHANNE	EL NUMBER,	1232/1	532 IN	ITERCHANGE	
DECK IDENTIFIER: FACT					, Marie and Marie and American
CS-1 LABEL: TYPE	KEY:	!S	LABEL	DUPLICATE?	No
PROGRAMMER:	TLR	DA	TE:	8 December	1967
NUMBER OF LA OUTPUT INST	RUCTIONS:	_ 43			
DESCRIPTION.					

This subroutine inserts the 1232/1532 channel number in all I/O instructions. It also modifies the TYPT and TYPC subroutines so as to accept either 1232 or 1532 coded data.

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PROGRAM DATA PAGE (Cont)

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REVISION

SPECIFICATION SYMBOL

TITLE: TYPE

INPUT PARAMETERS (Listed Sequentially):

ALPARM - Initial AL input parameter.

OUTPUT PARAMETERS (Listed Sequentially):

T\$1 T\$\$1 T\$2 T\$\$2 T\$3 T\$\$3 T\$4 T\$\$4 RNOOP { RJP · CONVER if 1232 selected ADDALK · 40 if 1532 selected

ABNORMAL EXITS (Listed Sequentially):

NEXT LEVEL PROCEDURES OR SUBROUTINES (Keys of Duplicate Labels Specified):

SYSTEM DATA REFERENCES:

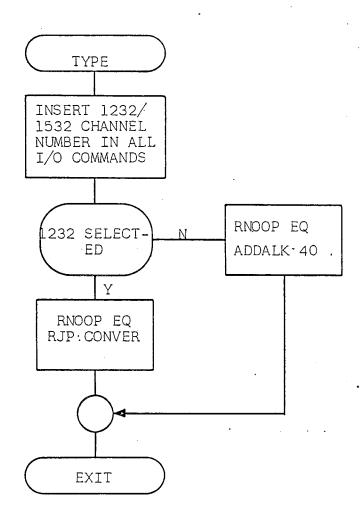
ALARMS AND/OR REMARKS:



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SPECIFICATION SYMBOL

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CS-1 LABEL: IOSET	KEY:			TE?
PROGRAMMER:	TLR	DATE	8 Decemb	er 1967.
NUMBER OF L4 OUTPUT IN	NSTRUCTIONS: -	14	Hamilton Wood	
DESCRIPTION:				
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			and the second s	Sel (ABEL-LLE
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OUTPUT PARAMETERS (Lis	ted Sequentiall	y);		
T\$1+1				
T\$241				
ABNORMAL EXITS (Listed	d Sequentially):			
ABNORMAL EXITS (Listed	d Sequentially):			
ABNORMAL EXITS (Listed	d Sequentially):			·
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SHEET 786 REVISION

SPECIFICATION SYMBOL SB-10163

TITLE: TEST - PRINT BANK NUMBER - H	HOLD ZEROES
DECK IDENTIFIER: FACT	
CS-1 LABEL: TEST KEY:	IS LABEL DUPLICATE? No
PROGRAMMER: HWM modified.by TLR	DATE: 8 Dec 6
NUMBER OF L4 OUTPUT INSTRUCTIONS: _	37
DESCRIPTION:	

This routine, TEST, checks the ability of that bank to hold zeroes.

This routine is referenced by routines CRANK and RSET.

According to the parameters set up for the bank being tested, specified area of memory is cleared to all "O"s. At the completion of the clearing, the contents of each address is entered into AL and checked. If AL contains all O's the next sequential address is checked. If it contains any improper information the incorrect information is entered into AL, AU remains cleared which is the correct information. If PROGRAM STOP O is set the routine stops and the display may be evaluated. Upon restarting with PROGRAM STOP O set, the failing address will be displayed in AL and the routine stops. If PROGRAM STOP O is not set, or upon restarting, PROGRAM SKIP 4 is referenced. If it is not set an error typeout will occur. After the typeout, or if PROGRAM SKIP 4 is set, PROGRAM SKIP) is checked. If set, the test for holding zeroes will recycle; if not set, the test will continue. Upon successful completion of the test an exit is made to routine HD1.

PAGE PROGRAM DATA (Cont)

SHEET 787 REVISION

SPECIFICATION SYMBOL SB-10163

TITLE: TEST - PRINT BANK NUMBER - HOLD ZEROES

INPUT PARAMETERS (Listed Sequentially):

PAR *

TEST PATTERN PAT 000000

OUTPUT PARAMETERS (Listed Sequentially):

BUFFER BNUM - BNUM+1 DIP DIP+1 HERE

ABNORMAL EXITS (Listed Sequentially):

NEXT LEVEL PROCEDURES OR SUBROUTINES (Keys of Duplicate Labels Specified):

TYPA DISAL

WIRE PROOF

SYSTEM DATA REFERENCES:

HD1

ALARMS AND/OR REMARKS:

ERROR DISPLAYS

1st PROGRAM STOP O - correct information in AU (cleared) incorrect

information in AL

2nd PROGRAM STOP 0 - failing address displayed in AL not set for error typeout PROGRAM SKIP 4 -

set to suppress error typeout

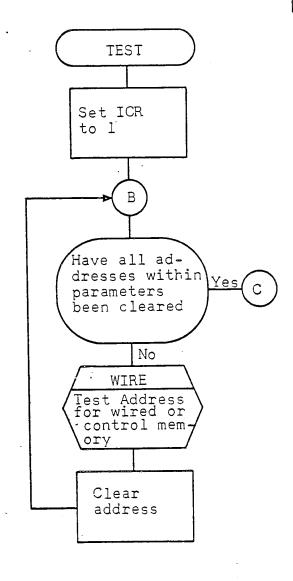
not set to continue test PROGRAM SKIP 0 -

set to recycle hold zeroes test



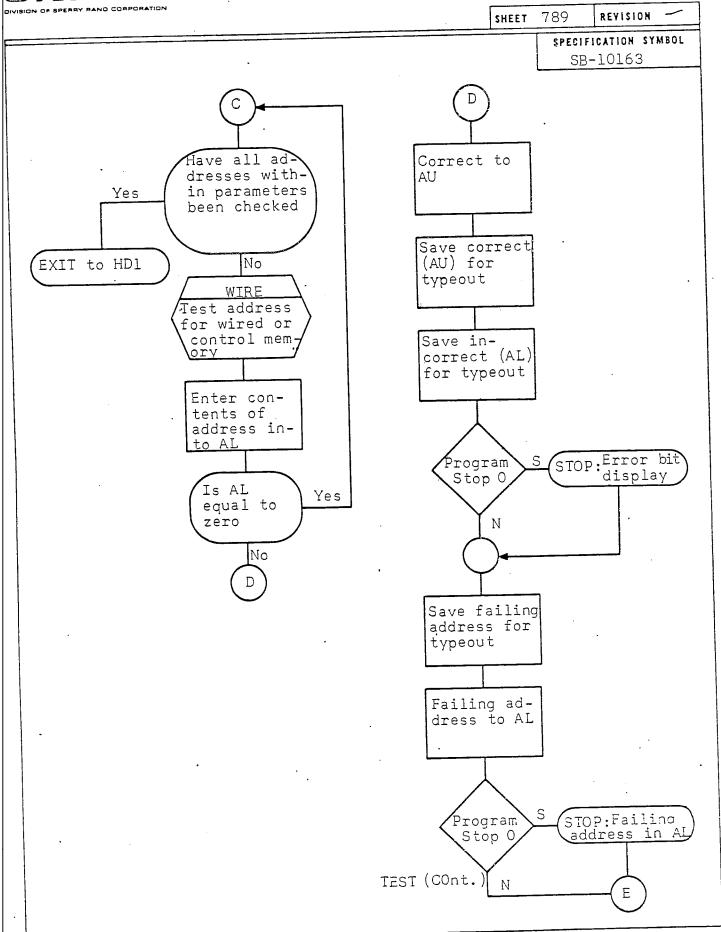
SHEET 788 REVISION —

SPECIFICATION SYMBOL SB-10163





UDI-596V 22/31-02 9/63



UDI-596V 22/31-02 9/63

SHEET 790 SPECIFICATION SYMBOL SB-10163 rogram Skip 4 PROOF check and type Program Skip 0 TEST (Cont.)



sheet 791 REVISION --

SPECIFICATION SYMBOL SB-10163

TITLE: PROOF - C	ONTINUE ERROR CHECK,	TYPEOUT	
DECK IDENTIFIER:			
	F KEY:		
PROGRAMMER:	PMC modified by TLR	DATE:	8 Dec 67
NUMBER OF L4	DUTPUT INSTRUCTIONS:	14 .	

DESCRIPTION:

This subroutine, PROOF, continues the error check and initiates the error typeout whenever an error typeout iswanted in routines TEST, HDl, HALT and HALTO.

Whenever an error occurs in any of the higher level routines and an error typeout is wanted, this routine, PROOF, continues to check the following addresses for incorrect contents. It then initiates an error typeout indicating the correct and incorrect test pattern and the inclusive consecutive addresses that contain incorrect test patterns. Upon completion of the error typeout, control is returned to the referencing routine.

PROGRAM DATA PAGE (Cont)

SHEET - 792

REVISION

SPECIFICATION SYMBOL SB-10163

TITLE: PROOF - CONTINUE ERROR CHECK, TYPEOUT

INPUT PARAMETERS (Listed Sequentially):

OUTPUT PARAMETERS (Listed Sequentially):

THERE

ABNORMAL EXITS (Listed Sequentially):

NEXT LEVEL PROCEDURES OR SUBROUTINES (Keys of Duplicate Labels Specified): ERROUT WIRE

SYSTEM DATA REFERENCES:

ALARMS AND/OR REMARKS:

793 REVISION -SHEET SPECIFICATION SYMBOL SB-10163 PROOF Save B for typeout Have all remaining ad-Yes dresses within parameters been checked and found tobeincorrec No WIRE Test address for wired or control memory Is content of address No incorrect Yes Save incremented B for typeout ERROUT Error printout Exit PROOF - Continue Error Check, Typeout



SHEET 794

REVISION

SB-10163

TITLE: HD1 - HOLD ONES			One control of the co
DECK IDENTIFIER: FACT			
CS-1 LABEL: HD1	KEY:	IS LABEL	DUPLICATE? No
PROGRAMMER: PMC modified	by TLR	DATE:	8 Dec 67
NUMBER OF LA OUTPUT INSTRU	ICTIONS: 29		

DESCRIPTION:

This routine, HDl, checks the ability of the memory banks to receive and retain all ones.

This routine is entered from routine TEST.

According to the parameters set up for the bank being tested a specified area of memory is loaded with all ones (777777). When the load is completed, the contents of each sequential address is entered into AL and checked for validity. If the contents are improper, AU is entered with the correct information (the incorrect being in AL) and PROGRAM STOP 0 is checked. If set, the subroutine stops and the display may be evaluated. Upon restarting, AL is entered with the failing address and, if PROGRAM STOP 0 is still set, the subroutine stops for the address display. If PROGRAM STOP 0 is not set, or upon restarting PROGRAM SKIP 4 is referenced. If it is not set an error typeout will occur. After the typeout, or if PROGRAM SKIP 4 is set, PROGRAM SKIP 0 is checked. If set, HDl will recycle; if not set, the test will continue. Upon successful completion of HDl an exit is made to routine HALT.

DATA PAGE (Cont) PROGRAM

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REVISION

SPECIFICATION SYMBOL SB-10163

TITLE:__HD1 - HOLD ONES

INPUT PARAMETERS (Listed Sequentially):

PAR PAR1

TEST PATTERN PAT1 777777

OUTPUT PARAMETERS (Listed Sequentially):

DIP DIP+1 HERE

ABNORMAL EXITS (Listed Sequentially):

NEXT LEVEL PROCEDURES OR SUBROUTINES (Keys of Duplicate Labels Specified): WIRE **PROOF** HALT

SYSTEM DATA REFERENCES:

ALARMS AND/OR REMARKS:

ERROR DISPLAYS

1st PROGRAM STOP 0 - correct information in AU (777777) incorrect

information in AL

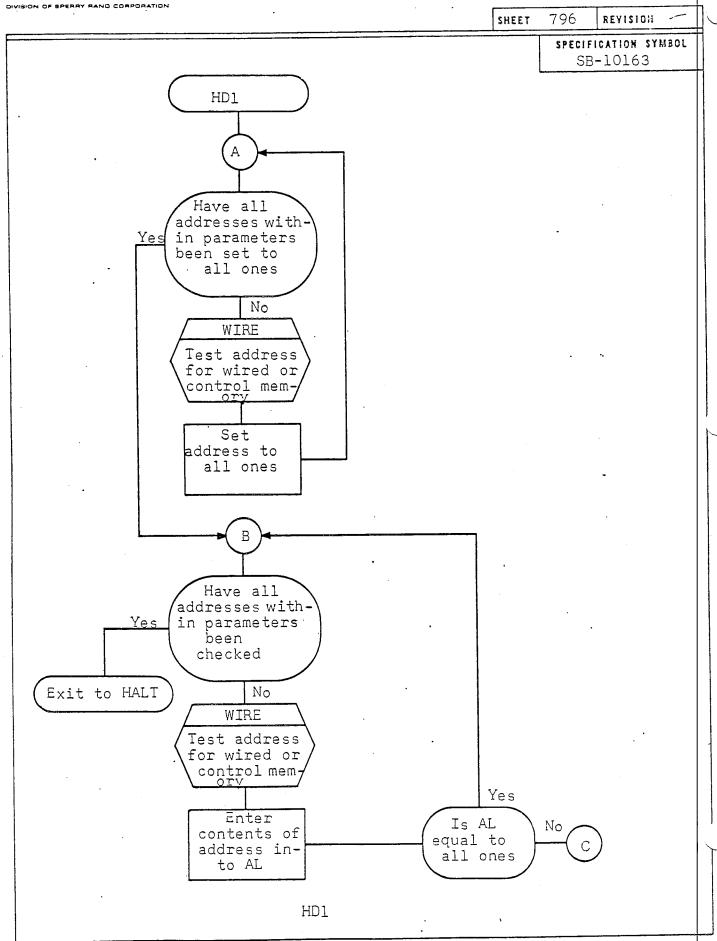
2nd PROGRAM STOP 0 - failing address displayed in AL PROGRAM SKIP 4 - not set for error typeout PROGRAM SKIP 4

set to suppress error typeout

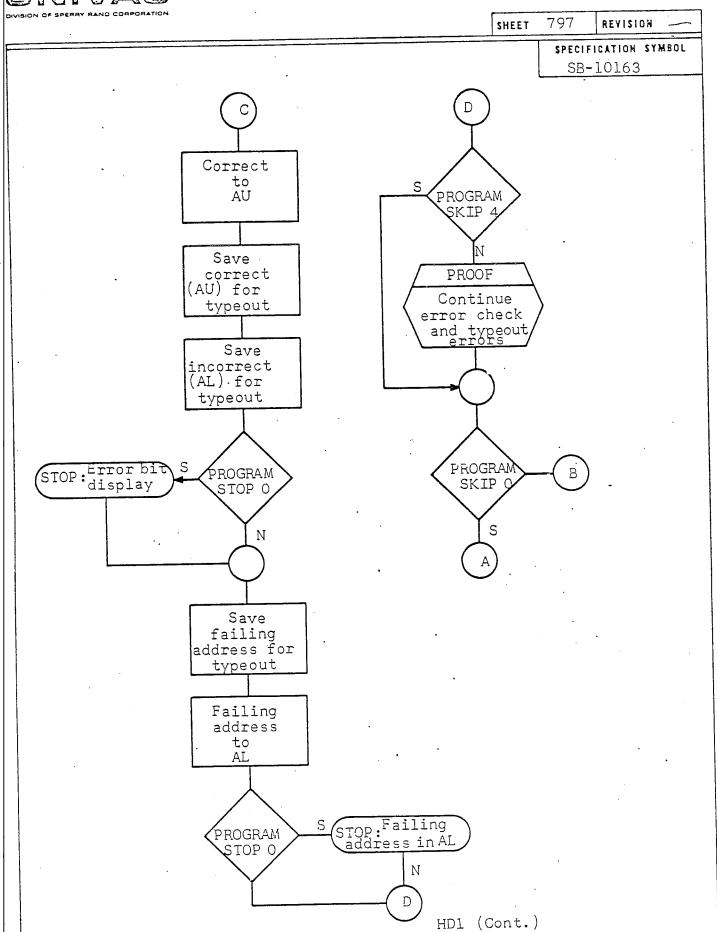
- not set to continue routine HD1 PROGRAM SKIP 0 set to recycle routine HDl



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PROGRAM PAGE DATA

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> SPECIFICATION' SYMBOL SB-10163

TITLE: HALT- HOLD ALTERNATE ONES AND	ZEROES
DECK IDENTIFIER: FACT	•
CS-1 LABEL: HALT KEY:	IS LABEL DUPLICATE?No
PROGRAMMER: PMC modified by TLR	DATE: 8 Dec 67
NUMBER OF L4 OUTPUT INSTRUCTIONS:	29
DESCRIPTION:	

This routine, HALT, checks the ability of the memory banks to receive and retain a pattern of alternate ones and zeroes (525252).

This routine is entered from routine HDl.

According to the parameters set up for the bank being tested a specific area of memory is loaded with alternate ones and zeroes (525252). When the load is completed, the content of each sequential address is entered into AL and checked for validity. the contents are incorrect, AU is entered with the correct information (the incorrect being in AL) and PROGRAM STOP 0 is checked. If set, the subroutine stops and the display may be evaluated. Upon restarting, AL is entered with the failing address and, if PROGRAM STOP O is still set, the subroutine stops for address display. If PROGRAM STOP O is not set, or upon restarting, PROGRAM SKIP 4 is referenced. If it is not set an error typeout will occur. After the typeout, or if PROGRAM SKIP 4 is set, PROGRAM SKIP O is checked. If set HALT will recycle; if not set, the test will continue. Upon successful completion of HALT, an exit is made to routine HALTO.

PROGRAM DATA PAGE (Cont) SHEET 799

REVISION

SPECIFICATION SYMBOL SE-10103.

TITLE: HALT - HOLD ALTERNATE ONES AND ZEROES

INPUT PARAMETERS (Listed Sequentially):

PAR PAR1 TEST PATTERN 525252

OUTPUT PARAMETERS (Listed Sequentially):

DIP DIP+1 HERE

ABNORMAL EXITS (Listed Sequentially):

NEXT LEVEL PROCEDURES OR SUBROUTINES (Keys of Duplicate Labels Specified):

WIRE PROOF HALTO

SYSTEM DATA REFERENCES:

ALARMS AND/OR REMARKS:

ERROR DISPLAYS

1st PROGRAM STOP 0 - correct information in AU (525252) incorrect

information in AL

2nd PROGRAM STOP 0 - failing address displayed in AL

PROGRAM SKIP 4 - not set for error typeout

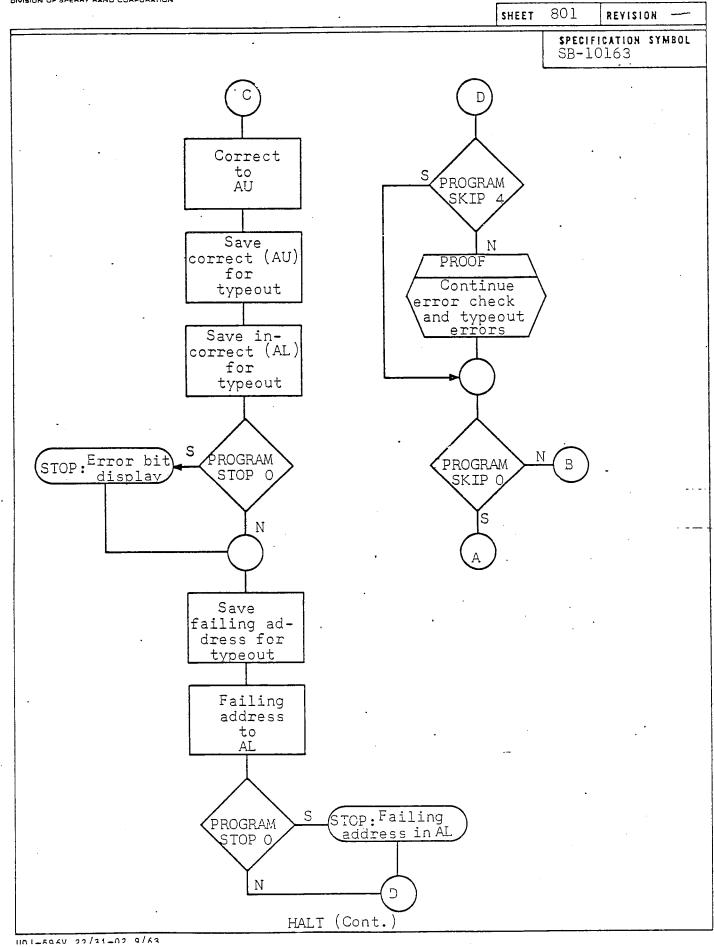
set to suppress error typeout

PROGRAM SKIP 0 - not set to continue routine HALT set to recycle routine HALT

UDI-596V 22/31-02 9/63

SHEET 800 REVISION SPECIFICATION SYMBOL SB-10163 HALT Have all addresses with-Yes in parameters been set to alternate ones and zeroes No WIRE Test address for wired or control memory Set address to alternate ones and zeroes Have all addresses with-Yes in parameters been checked Exit to HALTO No WIRE Test address for wired or control memory Is AL Enter equal to alcontents of address into ternate ones and zeroes ΑL HALT





SHEET 802 REVISION

SB-10163

TITLE:	HALTO -	HOLD ALT	ERNATE	ZEROES	AND	ONES			
DECK ID	ENTIFIER:	FACT				<u>-</u>			
CS-1 LA	BEL: HA	LTO	_ KEY:_		IS	LABEL	DUPLICATE?	No.	
PROGRA	MMER: _P	MC modifie	ed by TI	LR	_ DA	TE:	J Dec.	ó7	
NUMBER OF L4 OUTPUT INSTRUCTIONS: 29									
-DECCDID	TION								

DESCRIPTION:

This routine, HALTO, checks the ability of the memory banks to receive and retain a pattern of alternate zeroes and ones (252525).

This routine is entered from routine HALT.

According to the parameters set up for the bank being tested a specific area of memory is loaded with alternate zeroes and ones (252525). When the load is completed, the content of each sequential address is entered into AL and checked for validity. If the contents are incorrect, AU is entered with the correct information (the incorrect being in AL) and PROGRAM STOP 0 is checked. If set, the routine stops and the display may be evaluated. Upon restarting, AL is entered with the failing address and, if PROGRAM STOP 0 is still set, the subroutine stops for address display. If PROGRAM STOP 0 is not set, or upon restarting, PROGRAM SKIP 4 is referenced. If it is not set an error typeout will occur. After the typeout, or if PROGRAM SKIP 4 is set, PROGRAM SKIP 0 is checked. If set, HALT 0 will recycle, if not set, the test will continue. Upon successful completion of HALT 0, an exit is made to routine TWPO.

UNIVAC

PROGRAM DATA PAGE (Cont)

SHEET 803

REVISION

SPECIFICATION SYMBOL SB-10163

TITLE: HALTO - HOLD ALTERNATE ZEROES AND ONES

INPUT PARAMETERS (Listed Sequentially):

PAR PAR1 TEST PATTERN 252525

OUTPUT PARAMETERS (Listed Sequentially):

DIP DIP+1 HERE

ABNORMAL EXITS (Listed Sequentially):

NEXT LEVEL PROCEDURES OR SUBROUTINES (Keys of Duplicate Labels Specified):

WIRE PROOF TWPO

SYSTEM DATA REFERENCES:

ALARMS AND/OR REMARKS:

ERROR DISPLAYS

1st PROGRAM STOP 0 - correct information in AU (252525) incorrect

information in AL

2nd PROGRAM STOP 0 - failing address displayed in AL

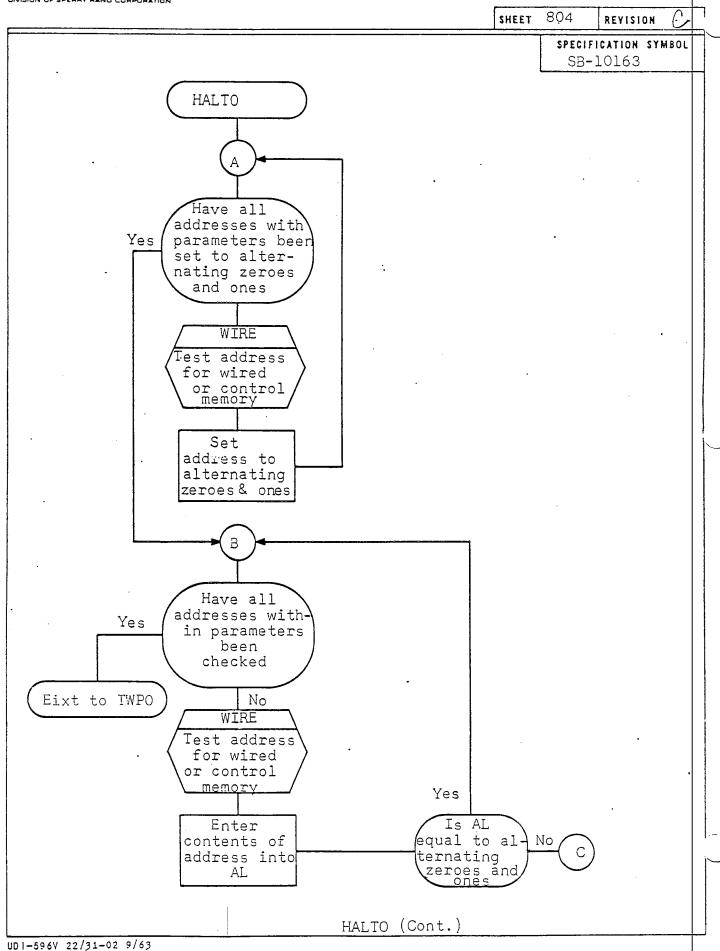
PROGRAM SKIP 4 - not set for error typeout

set to suppress error typeout

PROGRAM SKIP 0 - not set to continue routine HALTO

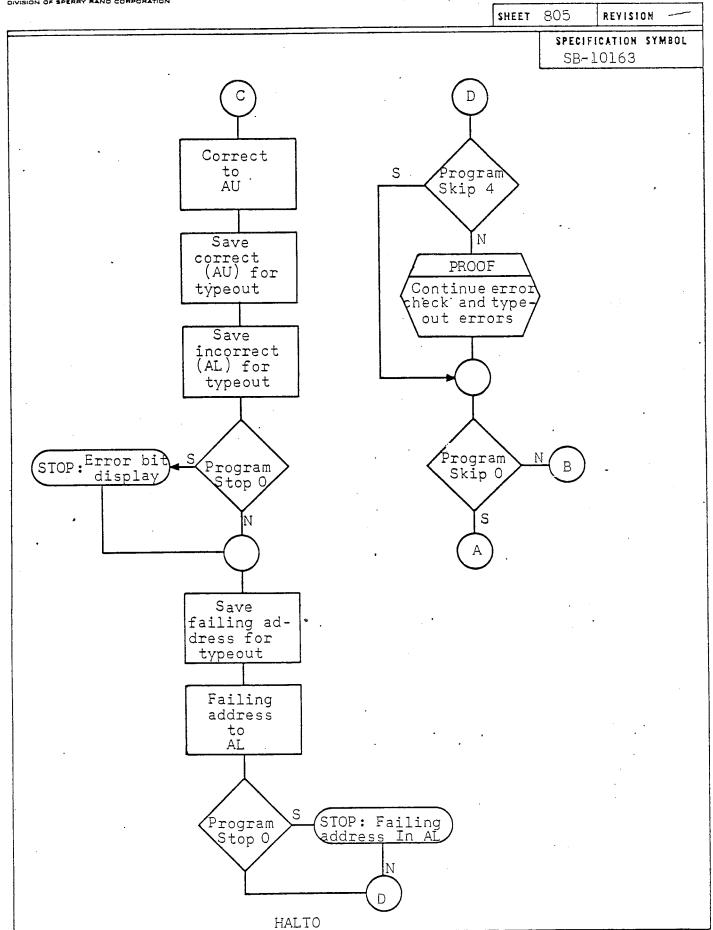
___set to recycle routine HALTO







1101 EDEN AD 124 AD ALED



SPECIFICATION SHEET:

PROGRAM DATA PAGE

SHEET 806 REVISION -

SB-10163

TITLE: TWPO - WORST PATTERN	
DECK IDENTIFIER: FACT	
CS-1 LABEL: TWPO KEY:	IS LABEL DUPLICATE? No
PROGRAMMER: T. L. R.	DATE: 8 Dec 67
NUMBER OF L4 OUTPUT INSTRUCTIONS:	159

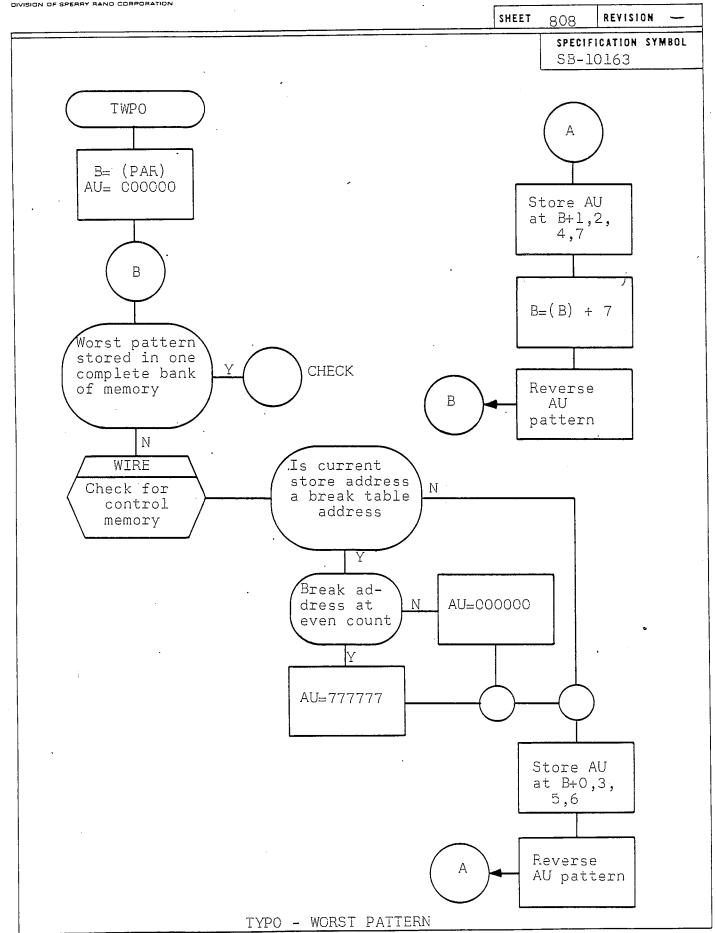
DESCRIPTION:

This routine, TWPO, tests the ability of the memory to accept and retain the worst pattern.

This routine is entered from routine HALTO.

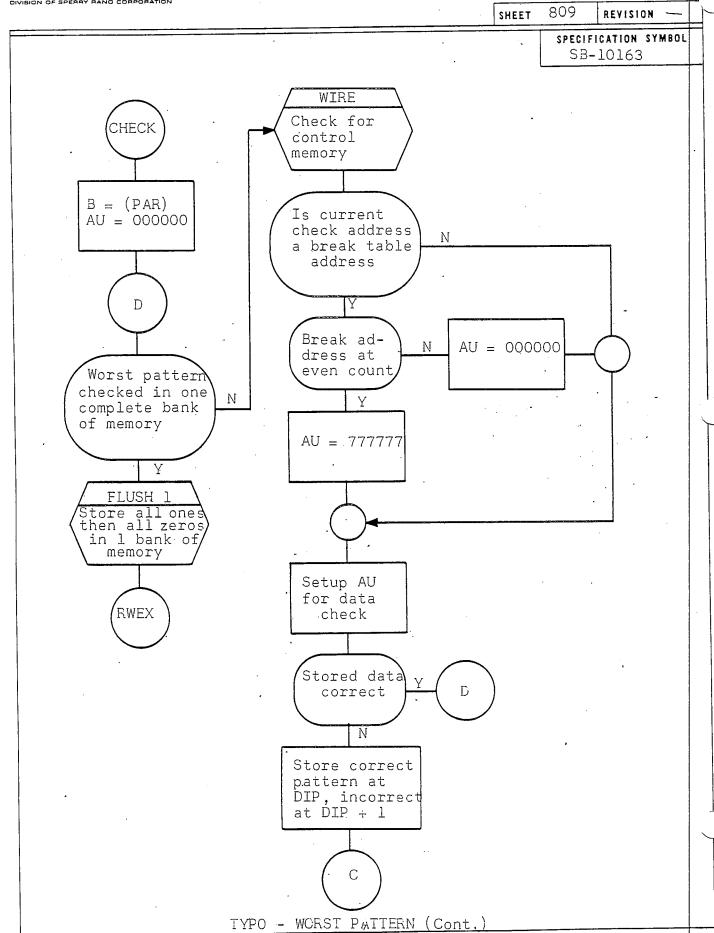
The worst pattern is a pattern that causes maximum cross-talk noise. The following arrangement produces the maximum noise. The area checked is in accordance with the parameters for the memory bank presently being tested. Upon completion of the loading, the content of each sequential address is entered into AL and checked for validity. If it is incorrect an exit is made to the error display routine ERROUT; upon completion of the subroutine, subroutine FLUSHI is utilized to set the tested memory area to all ones then to all zeroes. Then an exit is made to the next test routine RWEX.







HO- EDEN 22/21-02 9/62



SHEET 810 REVISION -SPECIFICATION SYMBOL SB-10163 С STOP AU, AL error data display S 0 NS Store failing address at there and here STOP S Failing address display in AL 0 NS **ERROUT** SKIP NS Error message 4 type-out S SKIP S TWPO - WORST PATTERN (Cont.)



SHEET 811 REVISION

SB-10163

TITLE: RWEX - RANDOM WORD EXECUTIVE	
DECK IDENTIFIER: FACT	
CS-1 LABEL: KEY:	IS LABEL DUPLICATE?
PROGRAMMER: HWA modified by TLF.	DATE: 8 Dec 67
NUMBER OF L4 OUTPUT INSTRUCTIONS:	22 .

DESCRIPTION:

This routine, RWEX, is the random word test executive.

RWEX is entered from routine TWPO.

All necessary initialization needed in this routine, RWEX, and in the READ/WRITE test, RW, is done when this routine RWEX, is entered. Through this routine the reference addresses in the Read/Write test are updated to allow testing segments of memory by setting up the address and exiting to the Read/Write subroutine, RW. At the completion of the verify portion of the Read/Write, RW, subroutine, a return is made to this routine RWEX, to update the reference addresses to the next sequential area which is then tested. This is repeated until all of the area to be tested by this section of the memory test has been tested, then an exit is made to the next routine LAST.

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TITLE:RWEX	- RANDOM WOF	/			
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INPUT PARAME	:IEKS (Listed S	equentially):			•
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ABNORMAL E. NEXT LEVEL RW LAST	PROCEDURES C	DR SUBROUTINES (Keys of Du	olicate Labe	ls Specified
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1101-EDAV 22/31-02 9/63

REVISION SHEET 813 SPECIFICATION SYMBOL SB-10163 RWEX Prestore increment count of memory test seg-Prestore instructions for storing random word image Has memory with-Yes Exit to LAST in parameters been tested No Set up limits of test next segment RW Random word read/write test

RWEX

UNIVAC

PROGRAM DATA PAGE

SHEET 814 REVISION

SB-10163

TITLE: RW - REA	AD/WRITE RA	ANDOM WORD TES	ST	·	
DECK IDENTIFIE	R: FACT				
CS-1 LABEL:	RW	KEY:	!S LABEI	L DUPLICATE? _	No
PROGRAMMER: _	HWM modif	ied by TLR	DATE:	ა ⊔ec .ć7	
NUMBER OF L.	OUTPUT IN	STRUCTIONS:	67		

DESCRIPTION:

This subroutine, RW, tests the ability of the memory to accept and retain random numbers and accomplish a fast read/write.

As a result of an entry from the Random Number Exec (RWEX) this subroutine takes numbers generated by the random-number-generator subroutine (RAN) and stores them in the addresses established by (RWEX). Simultaneously, a second store is made at another set of addresses to set up an image of the information being stored. This enables verification of the storages by comparing the two information cells at the completion of the fast read. For the fast read/write each address under test is read repeatedly 40 times. When the addresses have been read 40 times, their contents are checked for validity. If the comparison with the image addresses does not check, the incorrect information is entered into AL, the correct is entered into AU, then AU and AL are saved for the error tyepout and PROGRAM STOP O is checked. If PROGRAM STOP 0 is set the subroutine stops and the display may be evaluated. Upon restarting, or if PROGRAM STOP 0 is not set, the failing address is entered into AL, then AL is stored for the error typeout and PROGRAM STOP 0 is checked. If set, the subroutine stops and the operator may note the failing address. Upon restarting, or if PROGRAM STOP O is not set, PROGRAM SKIP 4 is checked. If not set, an error typeout will occur. After the typeout, or if PROGRAM SKIP 4 is set, PROGRAM SKIP 0 is checked. If set, RW will recycle if not set, RW will continue. After the completion of RW an exit is made to RWEX.

SPECIFICATION SHEET

PROGRAM DATA PAGE (Cont)

SHEET 815

REVISION

SB-10163

TITLE: RW - READ/WRITE RANDOM WORD TEST

INPUT PARAMETERS (Listed Sequentially):

RW21

RW22

RW14

RW12

OUTPUT PARAMETERS (Listed Sequentially):

HERE

THERE

DIP

DIP+1

ABNORMAL EXITS (Listed Sequentially):

NEXT LEVEL PROCEDURES OR SUBROUTINES (Keys of Duplicate Labels Specified):

RAN

WIRE

ERROUT

RWEX

SYSTEM DATA REFERENCES:

ALARMS AND/OR REMARKS:

ERROR DISPLAYS

1st PROGRAM STOP 0 - correct information in AU incorrect information

in AL

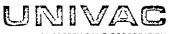
2nd PROGRAM STOP 0 - failing address displayed in AL

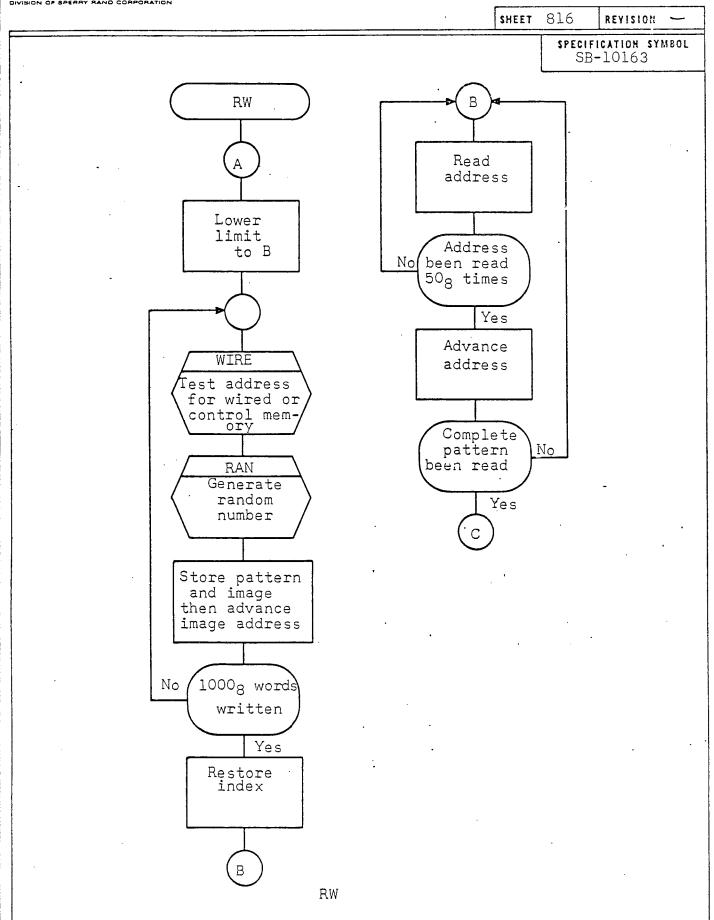
PROGRAM: SKIP 4 - not set for error typeout

set to suppress error typeout

PROGRAM SKIP 0 - not set to continue subroutine RW

set to recycle subroutine

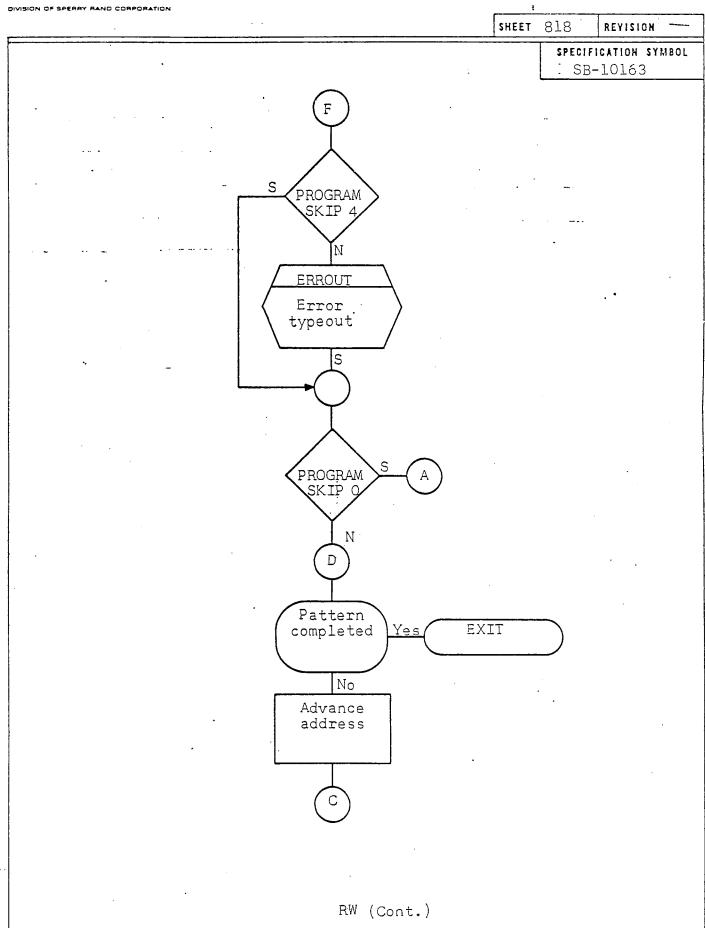






SHEET 817 REVISION SPECIFICATION SYMBOL SB-10163 WIRE Failing Test address address for wired or control memorv Save AL Current for error address typeout to AL Compare STOP: Failing address in AL test word PROGRAM against STOP O image Ν Word correct Yes _No Correct in 'AU incorrect in AL Save AU and AL for error typeout PROGRAM STOP: Error bit display STOP 0 N RW (Cont.)

UDI-596V 22/31-02 9/63



SPECIFICATION SHEET

PROGRAM DATA PAGE

SHEET 819 REVISION _

*				SPECIFICATION SYMBOL SB-10163
TITLE: RAN - RANDOM NUMBER	GENERATOR			
DECK IDENTIFIER: FACT				
CS-1 LABEL: RAN	KEY:	IS LABEL	DUPLICATE?	No No
PROGRAMMER: PMC modified	by TLR	DATE:	8 Dec.	57
NUMBER OF L4 OUTPUT INSTR	UCTIONS:	11		•

DESCRIPTION:

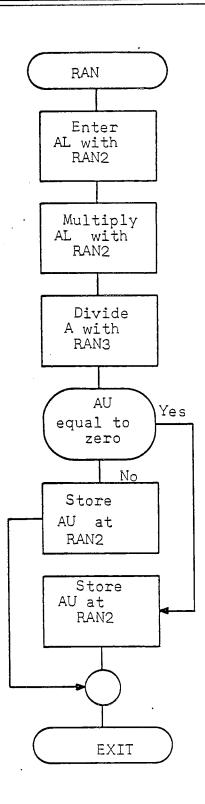
This subroutine generates a series of random numbers which are used by the read/write test, RW. Two basic constants are used: 000703 (RAN2) and 377775 (RAN3). RAN2 is entered into AL and multiplied by itself. At the completion of the multiply, the contents of A is divided by RAN3 (377775) and AU is checked. If AU is not equal to zero the contents of AU is stored at RAN2. If AU is equal to zero the contents of AL is stored at RAN2, thereby setting a new constant for the next generation of a random number. An exit is then made to the referencing subroutine, RW.

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SHEET 821 REVISION -

SPECIFICATION SYMBOL SB-10163



RAN - Random Number Generator



SHEET 821.1 REVISION 1/

SPECIFICATION SYMBOL SB-10163

LABEL: LAST

TITLE AND/OR PURPOSE: LAST, the addressing structure test checks

each cell for the ability to receive and hold

a unique value.

INPUT PARAMETERS:

None

OUTPUT PARAMETERS:

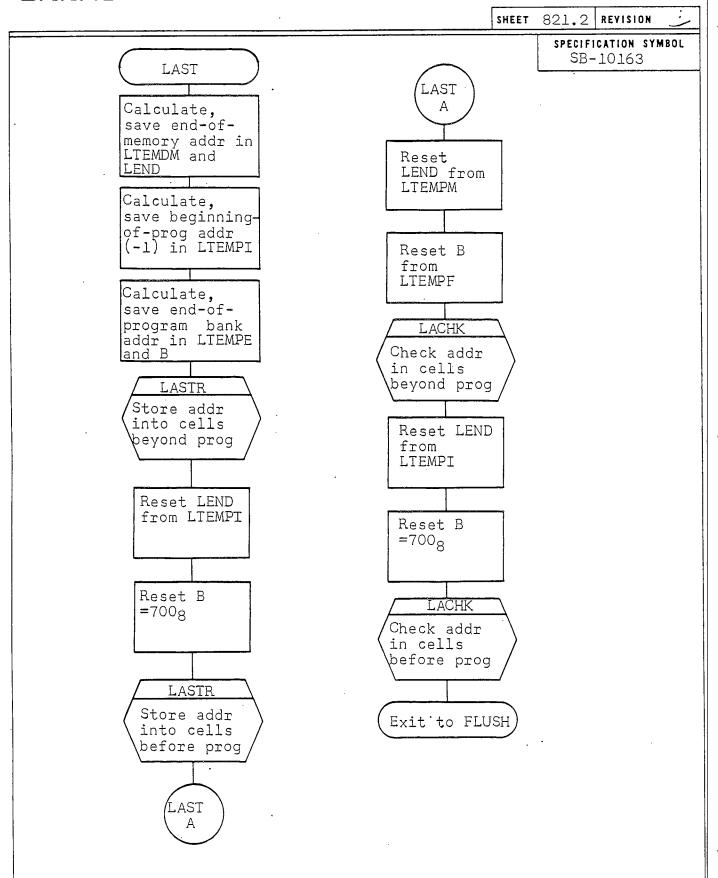
None

DESCRIPTION:

Beginning with the last cell of the bank where the program is currently stored, all cells are loaded with their own address. Then, beginning with address 700, all cells to the beginning of the program (-1) are also loaded with their own address.

These cells are then checked to see if their values are correct, with an error message occuring if an error is found. At the end of the checks, an exit is made to routine FLUSH.







SHEET 821.3

REVISION 1

SPECIFICATION SYMBOL SB-10163

LABEL: LASTR

TITLE AND/OR PURPOSE: LASTR loads a cell's address into the cell.

The loading operation is performed for all cells

Store addr 1950 cell 1990exed by B

within pre-defined limits.

INPUT PARAMETERS:

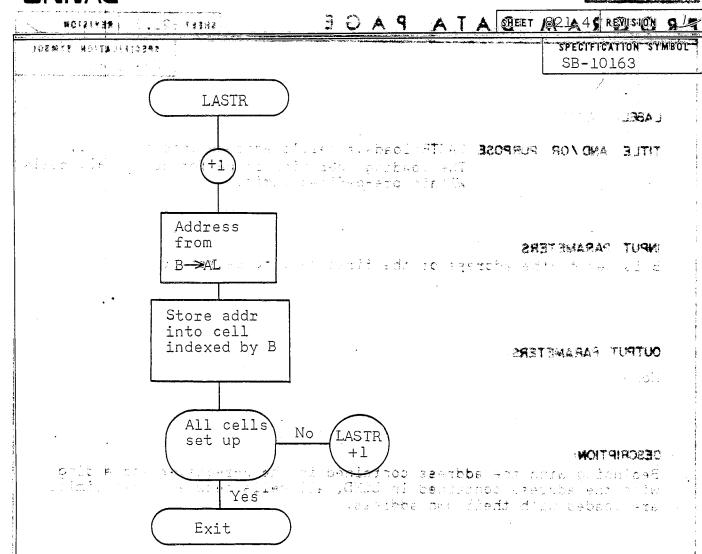
B is set to the address of the first cell to be set up.

OUTPUT PARAMETERS:

None

DESCRIPTION:

Beginning with the address contained in the B-register and ending with the address contained in LEND, all cells between these limits are loaded with their own address.





SHEET 821.5 REVISION

SPECIFICATION SYMBOL SB-10163

LABEL: LACHK

TITLE AND/OR PURPOSE: LACHK checks a cell to determine if it

contains its own address. The checking

is performed for all cells within

pre-defined limits.

INPUT PARAMETERS:

B is set to the address of the first cell to be checked.

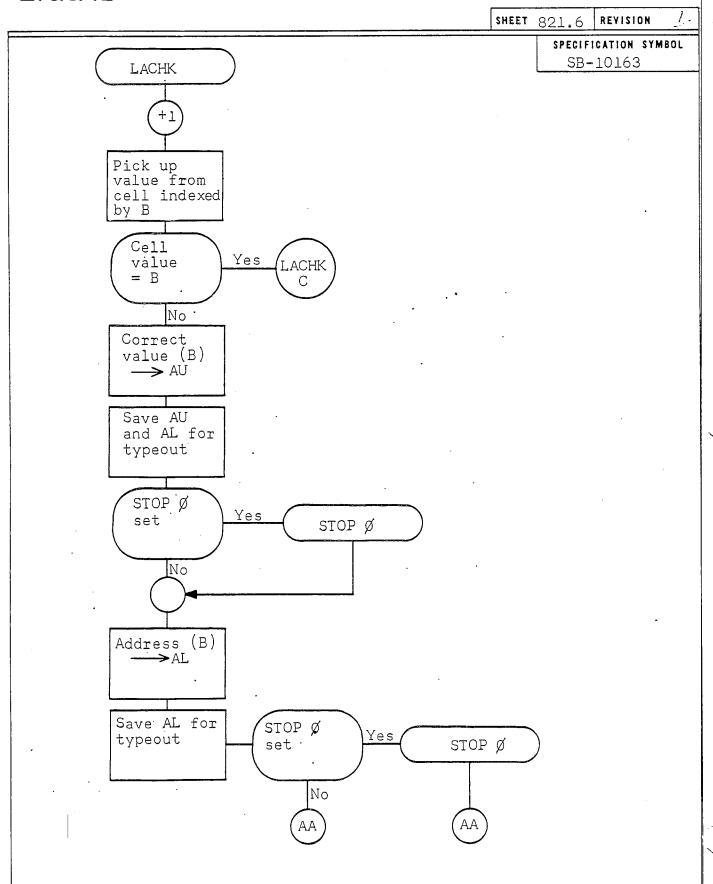
OUTPUT PARAMETERS:

None

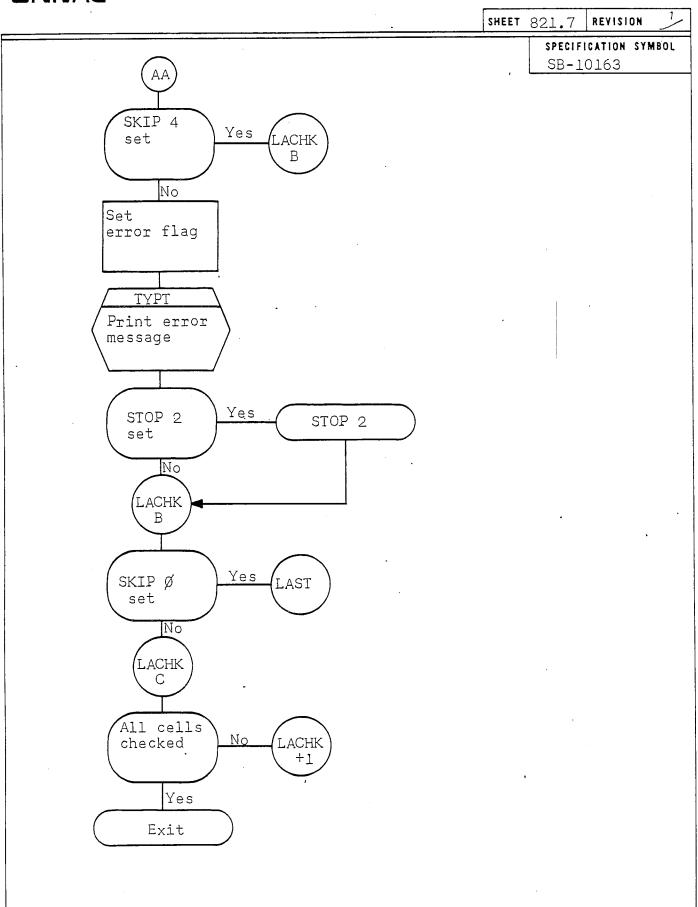
DESCRIPTION:

Beginning with the address contained in the B-register and ending with the address contained in LEND, all cells are checked for storage of their own address. If an error is found, a message is printed (unless SKIP 4 is set).

SPECIFICATION SHEET



SPECIFICATION SHEET





SHEET 822 REVISION -

SPECIFICATION SYMBOL SB-10163

FLUSH - FLUSH MEMORY	
DECK IDENTIFIER: FACT-	
CS-1 LABEL: FLUSH KEY:	IS LABEL DUPLICATE?No
PROGRAMMER: _ HWM modified by TLR	DATE: 8 Dec 67
NUMBER OF LA OUTPUT INSTRUCTIONS:	2
DESCRIPTION:	

This routine results in the setting to all ones and then the clearing of the memory region tested in routine RWEX. Subroutine FLUSH1 is referenced and then an exit is made to routine RELO.

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DATA PAGE (Cont) SHEET 893 MEYISION SPECIFICATION SYMBOL SB=10163----108472 HOLF+#1712392 FLUSH MEMORY INPUT PARAMETERS (Listed Sequentially): area all one OUTPUT PARAMETERS (Listed Sequentially): ABNORMAL EXITS (Listed Sequentially): NEXT LEVEL PROCEDURES OR SUBROUTINES (Keys of Duplicate Labels Specified): FLUSH1 HELIE RELO SYSTEM DATA REFERENCES: ALARMS AND/OR REMARKS:

SHEET PERCEPTION TRUPE

SPECIFICATION SYMBOL ___SB__10163

FILLISH MEMORY

HOUT PARAMETERS (Listed Sequential

FLUSH1 Set tested area all ones then clear Exit to RELO

OUTPUT PARAMETERS (Listed Sequentially):

A KANNA

ABNORMAL EXITS (Listed Sequentially):

MEXT LEVEL PROCEDURES OR SUBROUTINES (Keys of Duplicate Labels Specified): **FLUSH!** FLUSH RELO

SYSTEM DATA REFERENCES:

ALARMS AND/OR REMARKS:

UNIVAC

PROGRAM DATA PAGE

SHEET 825 REVISION -

SB-10163

TITLE: FLUSH1- FLUSH MEMORY	
DECK IDENTIFIER: FACT	
CS-1 LABEL: FLUSH1 KEY:	IS LABEL DUPLICATE?
PROGRAMMER: PMC modified by TLR	DATE:8 Dec. 67
NUMBER OF LA OUTPUT INSTRUCTIONS: 16	

DESCRIPTION:

This subroutine, FLUSH1, normalizes the section of memory which has been tested by the memory test.

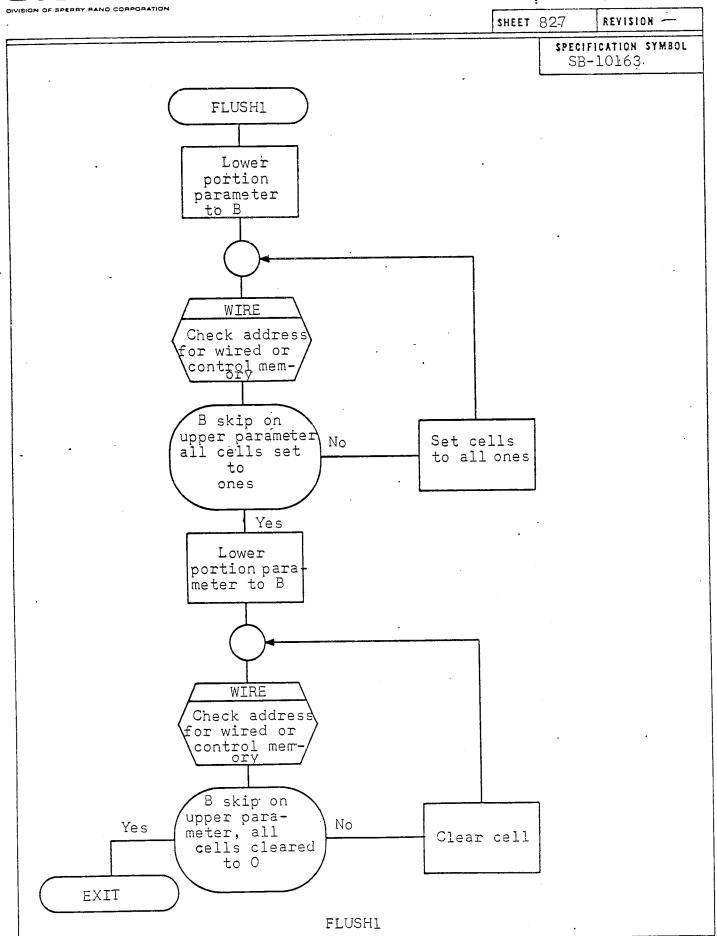
. This subroutine is referenced by routines WP1, CWP1 and FLUSH.

According to the parameters of the present section of the memory test all cells are first set to all ones (777777) then all cells are cleared to zero (000000). An exit is then made to the referencing routine.

, _ز د	ROGRAM DATA PAGE (Cont) SHEET	826 REVISION
e general	TITLE: FLUSH1 - FLUSH MEMORY	American State Control of the Contro
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•	ABNORMAL EXITS (Listed Sequentially):	
	NEXT LEVEL PROCEDURES OR SUBROUTINES (Keys of Duplicate WIRE	Labels Specified):
	SYSTEM DATA REFERENCES:	; ; ;
	ALARMS AND/OR REMARKS:	
		i



HDI-596V 22/31-02 9/63



SHEET 828 REVISION -

SB-10163

TITLE: RSET - TRANSFER ROUTINE	
DECK IDENTIFIER: FACT .	
CS-1 LABEL: RSET KEY:	IS LABEL DUPLICATE?No
PROGRAMMER: HWM modified by TLR	DATE: 3
NUMBER OF L4 OUTPUT INSTRUCTIONS:	<u>98</u> .

DESCRIPTION:

This routine, RSET, transfers the memory test to the next memory bank, then enters this transferred memory test and tests the next memory bank.

RSET is entered from RELO if in RELO, PROGRAM SKIP 1 is not set.

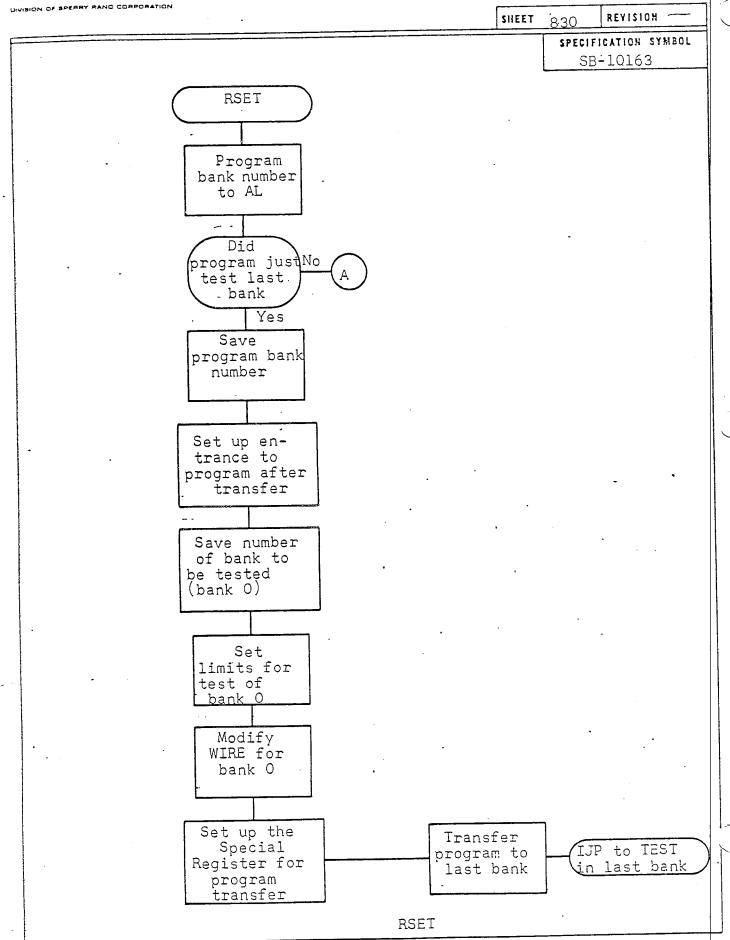
The memory test is run by loading the test in bank zero and then testing bank one. Then the program is transferred to bank one and the next appropriate bank is tested. If the memory test is in the last memory bank, bank zero is tested. The the memory test is transferred to bank zero and the cycle repeats. When RSET is entered a check is made to determine if the last memory bank was just tested. If it was the program is transferred to the last bank and bank zero is tested. If the last bank was not just tested a check is made to determine if the memory test program is in the last bank. If it is the program is transferred to bank zero and bank one is tested. If neither of the above checks are positive the program is transferred to the next bank and the next bank+1 is tested. After each transfer by this routine an exit is made to the transferred memory test program.

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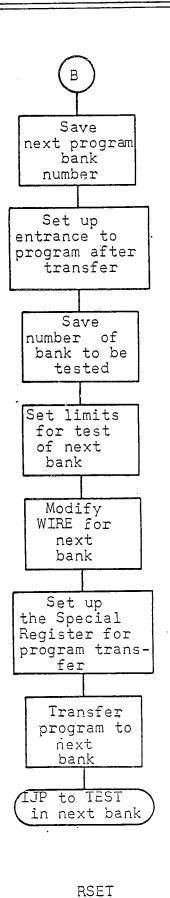


UDI-596V 22/31-02 9/63

SHEET REVISION 831 SPECIFICATION SYMBOL SB-10163 Program bank number to AL Is program in No last bank Yes Save program bank number (bank 0) Set up entrance to program after transfer Save number of bank to be tested (bank 1) Set limits for test of bank l Modify WIRE for bank 1 Set up the transfer Special IJP to TRACK orogram to Register for first in last bank program bank transfer RSET

SHEET 832 REVISION d

SB-10163



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PROGRAM DATA PAGE

SHEET 833 REVISION -

SPECIFICATION SYMBOL SB-10163

TITLE: RELO - RELOCATION			
DECK IDENTIFIER: FACT			
CS-1 LABEL: RELO	KEY:	IS LABEL DUPLICATE?	No
PROGRAMMER: HWM modified	by TLR	DATE: 8 Dec 67	
NUMBER OF L4 OUTPUT INSTRU	ictions:2	7 -	

DESCRIPTION:

This routine is part of the memory test control and contains constants and storage for the memory test.

This routine is referenced by routine FLUSH after the memory test has been completed in the present bank and the tested memory has been normalized.

PROGRAM STOP 1 is checked upon entering RELO. If set, the program stops, terminating the memory test. If PROGRAM STOP 1 is not set, or upon restarting, PROGRAM SKIP 1 is checked. If set the memory test will recycle in the present memory bank. If not set, an exit is made to routine REST to transfer the memory test and test the next memory bank. This routine adjusts the buffer limits for error typeouts to the values needed in the next bank. Also, the BCW's for TYPT and TYPC are adjusted to the new bank.

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				SPECIFICATION SYMBOSB-10163
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PROGRAM STOP 1 -	set for end o	of memory	test	

PROGRAM SKIP 1 -Set, recycle the memory test and retest the

test next memory bank.

Not set, exit to RSET to transfer program and

present bank.



SHEET REVISION -835 SPECIFICATION SYMBOL SB-10163 RELO S ROGRAM END TEST STOP .N Adjust buffer limits for error typeouts in the next bank MODIFY TYPT AND TYPC BCW FOR NEW BANK S EXIT to TRACK PROGRAM SKIP Ν Exit to RSET RELO