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      .TITLE RB09 SYSTEM DIAGNOSTIC
/8-17-71, SMR
/PLEASE REPORT ANY PROBLEMS TO
/ STANLEY M, ROSE
/ LABORATORY OF COMPUTER SCIENCE
/ MASSACHUSETTS GENERAL HOSPITAL
/ 32 FRUIT STREET
/ BOSTON, MASSACHUSETTS 02114
/ (617) 726-3937
/
/USES EAE , BUT SAVES MQ, STEP COUNTER
/
/ERRORS:
/ 1: HARDWARE ERROR, LEGITIMATE BCD ADDRESS
/   STATUS REGISTER
/   DISK SIDE (0 OR 1)
/   TRACK ADDRESS (IN OCTAL)
/   SECTOR ADDRESS (IN OCTAL)
/
/ 2: HARDWARE ERROR, ILLEGAL BCD ADDRESS
/   STATUS REGISTER
/   ADDRESS LOADED
/
/ 3: MORE TYPE 1 OR 2 ERRORS THAN SPECIFIED BY [UODSW+1]
/   WILL NOT RE-TRY THIS BLOCK
/
/ 4: COMPARE ERROR
/   DISK SIDE
/   TRACK ADDRESS (OCTAL)
/   SECTOR ADDRESS (OCTAL)
/   CORE ADDRESS
/   OFFSET
/   EXPECTED
/   RECEIVED
/
/ 5: MORE ERRORS/BLOCK THAN SPECIFIED BY [UODSW+2]
/   WILL RE-READ AND TRY AGAIN
/
/ 6: RETRIED AS MANY TIMES AS SPECIFIED BY [UODSW+3]
/   WILL GO ON TO NEXT BLOCK
/
/ 7: ILLEGAL API ENTRY, NO FLAG SET
/   STATUS REGISTER
/   IORS
/   .EJECT
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/ 10: AFTER ERRORS 7, 10 OR 11 THE PROGRAM SHOULD REINIALIZE AND RESTART  
/ HOWEVER IT REENTERED ILLEGALLY  
/ STATUS REGISTER  
/ IORS

/ 11: INTERRUPT ENTRY AFTER CLEARING STATUS REGISTER AND STARTING  
/ NO NEW IO OPERATION  
/ STATUS REGISTER  
/ IORS

707702 A EEM=707702  
707764 A EBA=707764 /FOR PDP9 OR 15  
641000 A CLAC=641000  
  
703304 A DBK=703304  
703344 A DBR=703344  
705501 A SPI=705501  
705504 A ISA=705504  
705512 A RPL=705512  
EJECT

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,EBREL
00000 R 600007 A UODSW 600007 /IO,API CHANNEL 7 (BIT 2 SET TESTS MAINT.)
/((BIT 3 SET IS TEST WITH ONLY 64 WORD TESTS)
00001 R 000002 A HRDMAX 2 /MAX, NUMBER OF RETRIES ON HARDWARE ERRORS
00002 R 000005 A BLKCMP 5 /MAXIMUM NUM, OF REPORTED COMP, ERRORS / BLOCK
00003 R 000001 A CMPMAX 1 /MAXIMUM NUM, OF REREADS ON COMP, ERRORS
00004 R 000076 R ,DSA RBSERV /NORMAL ENTRY ADDRESS
00005 R 000032 R ,DSA RBINIT /INITIALIZE ADDRESS
00006 R 220260 A ,SIXBT "RB09 "
00007 R 714040 A
00010 R 000004 A SWITCH 4 /HOLD ON SWITCH 15
00011 R 000000 A ,BLOCK 7
00020 R 000000 A SYSCOM 0 /SYSTEM COMMUNICATION WORD
00021 R 000000 A ERWC 0 /TWO'S COMPLEMENT NUMBER OF WORDS TO PRINT
00022 R 000000 A ERCODE 0 /FIRST WORD OF MESSAGE
,REPT 7
00023 R 000000 A 0 /REST OF PRINT BUFFER
00024 R 000000 A *R
00025 R 000000 A *R
00026 R 000000 A *R
00027 R 000000 A *R
00030 R 000000 A *R
00031 R 000000 A *R
,EJECT

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00032 R 740040 A RBINIT XX /INITALIZE AND START UP
00033 R 707764 A EBA
00034 R 707702 A EEM /9-15 COMPATIBLE ALTHOUGH NO 15'S WITH RB09!
00035 R 140021 R DZM ERWC
00036 R 140022 R DZM ERCODE
00037 R 201754 R LAC (BUFF
00040 R 040752 R DAC BUFFER /MOVING BUFFER INITIAL LOCATION
00041 R 777700 A LAW -100
00042 R 040570 R DAC DSKWC
00043 R 200000 R LAC UODSW /CHECK IF MAINTENANCE SECTORS
00044 R 501755 R AND (100000) /SHOULD BE USED (BIT 2)
00045 R 741200 A SNA
00046 R 600057 R JMP RBINT1
00047 R 201756 R LAC (120 /YES
00050 R 040737 R DAC PRIME
00051 R 201757 R LAC (200
00052 R 040720 R DAC MAITSC
00053 R 777766 A LAW -12
00054 R 040750 R DAC RUNNMB
00055 R 140751 R DZM START /MUST START ON 0 FOR MAINTENANCE
00056 R 600064 R JMP RBINT2

/
00057 R 140720 R RBINT1 DZM MAITSC
00060 R 201760 R LAC (127 /INCREMENT TRACK BY 1,SECTOR BY 7
00061 R 040737 R DAC PRIME
00062 R 777775 A LAW -3
00063 R 040750 R DAC RUNNMB /ONLY USED WHEN 'STAY IN 64 WORD/TRANSFER' MODE

/
00064 R 777773 A RBINT2 LAW -5
00065 R 040020 R DAC SYSCOM /NEXT ENTRY THROUGH RBSERV
00066 R 201761 R LAC (WRITE
00067 R 040174 R DAC EXIT
00070 R 040745 R DAC ARTFLG /NEXT ENTRY ARTIFICIAL
00071 R 200751 R LAC START
00072 R 040740 R DAC BLOCK /INITIAL BLOCK
00073 R 703344 A DBR
00074 R 400075 R XCT ,+1 /NEC, ON 9
00075 R 620032 R JMP# RBINIT
,EJECT

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00076 R 740040 A RBSERV XX /NORMAL ENTRY POINTR
00077 R 707764 A EBA
00100 R 707702 A EEM /FOR 9-15

00101 R 040730 R DAC ACSAVE
00102 R 641002 A LACQ
00103 R 040733 R DAC MQSAVE
00104 R 641001 A LACS
00105 R 040732 R DAC SCSAVE
00106 R 201762 R LAC (400000)
00107 R 705501 A SPI
00110 R 600122 R JMP APIOFF /NON-API ENTRY
00111 R 400722 R XCT DSSF
00112 R 600137 R JMP ERROR7 /ILLEGAL API

00113 R 400724 R RBSER1 XCT DSRS
00114 R 040743 R DAC STAT
00115 R 400725 R XCT DSCS
00116 R 200745 R LAC ARTFLG /WAS ARTIFICIAL ENTRANCE EXPECTED?
00117 R 740200 A SZA
00120 R 600163 R JMP ILLINT /YES, BUT FLAG IS SET
00121 R 620174 R JMP* EXIT /CONTINUE FROM LAST EXIT

00122 R 400722 R APIOFF XCT DSSF /FLAG UP?
00123 R 600127 R JMP APIOF1 /NO
00124 R 750000 A CLA
00125 R 040730 R DAC ACSAVE
00126 R 600113 R JMP RBSER1

00127 R 200745 R APIOF1 LAC ARTFLG /ARTIFICIAL ENTRY EXPECTED?
00130 R 755201 A SNA!CLCICLL
00131 R 600134 R JMP NOFLAG /NO
00132 R 200020 R LAC SYSCOM /READY FOR ARTIFICIAL ENTRY?
00133 R 750201 A SZA!CLC /SYSCOM=0 MEANS READY
00134 R 620076 R NOFLAG JMP* RBSERV /NOT THIS DEVICE
00135 R 140745 R DZM ARTFLG /ARTIFICIAL ENTRANCE ACHIEVED
00136 R 620174 R JMP* EXIT /CONTINUE ON
EJECT

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00137 R 100225 R ERROR7 JMS PUTCHK
00140 R 201763 R LAC (7)
00141 R 040022 R DAC ERCODE

/
00142 R 400724 R ER7,1 XCT DSRS
00143 R 040023 R ER7,2 DAC ERCODE+1
00144 R 77775 A LAW -3
00145 R 040021 R DAC ERWC
00146 R 400724 R XCT DSRS
00147 R 040023 R DAC ERCODE+1
00150 R 700314 A IORS
00151 R 040024 R DAC ERCODE+2
00152 R 77775 A LAW -3
00153 R 040020 R DAC SYSCOM
00154 R 040745 R DAC ARTFLG
00155 R 400725 R XCT DSCS
00156 R 100174 R JMS EXIT
00157 R 100225 R JMS PUTCHK
00160 R 201764 R LAC (10)
00161 R 040022 R DAC ERCODE
00162 R 600142 R JMP ER7,1

/
00163 R 100225 R ILLINT JMS PUTCHK
00164 R 201765 R LAC (11)
00165 R 040022 R DAC ERCODE
00166 R 200743 R LAC STAT
00167 R 600143 R JMP ER7,2
EJECT

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/RESTART FROM SCRATCH

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00170 R 740040 A MONEXT XX /NORMAL INTERRUPT EXIT
00171 R 140745 R DZM ARTFLG
00172 R 100174 R JMS EXIT
00173 R 620170 R JMP* MONEXT

/
00174 R 740040 A EXIT XX /ALL EXITS THROUGH HERE
00175 R 200732 R LAC SCSAVE /RESTORE STEP COUNTER
00176 R 241766 R XOR (77 /CMA
00177 R 341767 R TAD (640402
00200 R 501770 R AND (640477 /CREATE SHIFT
00201 R 040202 R DAC ,+1
00202 R 740040 A XX /EXECUTE CREATED SHIFT
00203 R 200733 R LAC MQSAVE
00204 R 652000 A LMQ
00205 R 200730 R LAC ACSAVE
00206 R 703344 A DBR
00207 R 400210 R XCT ,+1
00210 R 620076 R JMP* RBSERV /RETURN TO MONITOR

/
00211 R 740040 A ARTXIT XX /LEAVE EITHOUT STARTING ANY IO
00212 R 200020 R LAC SYSCOM /NEXT ENTRANCE WITHOUT FLAG SET
00213 R 740200 A SZA /ANY ERRORS IN TABLE?
00214 R 600220 R JMP ,+4 /YES, CHANGE TO -2
00215 R 140021 R DZM ERWC
00216 R 777773 A LAW -5
00217 R 741000 A SKP
00220 R 777776 A LAW -2
00221 R 040020 R DAC SYSCOM
00222 R 040745 R DAC ARTFLG
00223 R 100174 R JMS EXIT
00224 R 620211 R JMP* ARTXIT
,EJECT

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00225 R 740040 A PUTCHK XX /CHECK IF ANYTHING IN OUTPUT TABLE
00226 R 200020 R LAC SYSCOM
00227 R 741200 A SNA /OK?
00230 R 600232 R JMP PUTCK1 /YES, TABLE EMPTY
00231 R 100211 R JMS ARTXIT

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/
00232 R 777777 A PUTCK1 LAW -1
00233 R 040020 R DAC SYSCOM
00234 R 620225 R JMP* PUTCHK

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/
/OUTPUT AN RB09 BCD DISK ADDRESS INTO ERRTABLE
/ STARTING AT [BBTMP2]
/SIDE 0 OR 1
/OCTAL OF TRACK (0-99 DEC.)
/OCTAL OF SECTOR (0-70 DEC.)
/

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00235 R 740040 A BCDOUT XX
00236 R 200665 R LAC BINBCD
00237 R 673602 A LMQ!CLAC!LLS+2
00240 R 060716 R DAC* BBTMP2
00241 R 440716 R ISZ BBTMP2
00242 R 641604 A CLAC!LLS+4
00243 R 744010 A RCL /MULT, BY 2
00244 R 040715 R DAC BBTMP1
00245 R 742010 A RTL /MULT, BY 4 (*2)
00246 R 340715 R TAD BBTMP1
00247 R 040715 R DAC BBTMP1
00250 R 641604 A CLAC!LLS+4
00251 R 340715 R TAD BBTMP1
00252 R 060716 R DAC* BBTMP2
00253 R 440716 R ISZ BBTMP2
00254 R 641604 A CLAC!LLS+4
00255 R 744010 A RCL /S1*2
00256 R 040715 R DAC BBTMP1
00257 R 742010 A RTL /S1*8
00260 R 340715 R TAD BBTMP1 /S1*10
00261 R 040715 R DAC BBTMP1
00262 R 641604 A CLAC!LLS+4
00263 R 340715 R TAD BBTMP1
00264 R 060716 R DAC* BBTMP2
00265 R 620235 R JMP* BCDOUT
,EJECT

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/ RB09 HANDLER
00266 R 200752 R WRITE LAC BUFFER
00267 R 040746 R DAC POINTR
00270 R 200570 R LAC DSKWC
00271 R 744022 A STL;RAR
00272 R 744022 A STL;RAR
00273 R 040744 R DAC LOOP /CUT LOOP BY 4 FOR INCREASED SPEED
00274 R 200740 R LAC BLOCK
00275 R 240736 R XOR HASH
00276 R 060746 R WRITE1 DAC* POINTR
00277 R 440746 R ISZ POINTR
00300 R 341771 R TAD (1
00301 R 060746 R DAC* POINTR
00302 R 440746 R ISZ POINTR
00303 R 341771 R TAD (1
00304 R 060746 R DAC* POINTR
00305 R 440746 R ISZ POINTR
00306 R 341771 R TAD (1
00307 R 060746 R DAC* POINTR
00310 R 440746 R ISZ POINTR
00311 R 341771 R TAD (1
00312 R 440744 R ISZ LOOP
00313 R 600276 R JMP WRITE1
00314 R 200740 R LAC BLOCK
00315 R 100665 R JMS BINBCD
00316 R 040665 R DAC BINBCD
00317 R 201772 R LAC (7000 /WRITE, INT, EN
00320 R 100553 R JMS DISK /MOVE THE BUFFER
00321 R 100537 R JMS MOVBUF
00322 R 200740 R LAC BLOCK
00323 R 340737 R TAD PRIME
,DEC
00324 R 341773 R TAD (-16000 /NO GREATER THAN 15999
00325 R 741100 A SPA
00326 R 341774 R TAD (16000
,OCT
00327 R 040740 R DAC BLOCK
00330 R 540751 R SAD START
00331 R 741000 A SKP /DONE WITH WRITING DISK, NOW READ
00332 R 600266 R JMP WRITE
,EJECT

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/ RB09 READ ROUTINE
00333 R 200003 R READ LAC CMPMAX
00334 R 740001 A CMA /NUMBER OF REREADS ON COMPARE ERRORS
00335 R 040742 R DAC RDFTRY
00336 R 200740 R READ2 LAC BLOCK
00337 R 100665 R JMS BINBCD
00340 R 040665 R DAC BINBCD
00341 R 201775 R LAC (6000 /READ, INT, EN
00342 R 100553 R JMS DISK
00343 R 200752 R LAC BUFFER
00344 R 040746 R DAC POINTR
00345 R 200570 R LAC DSKWC
00346 R 744022 A STLIRAR
00347 R 744022 A STLIRAR
00350 R 040744 R DAC LOOP
00351 R 200002 R LAC BLKCMP /NUMBER OF COMPARE ERRORS
00352 R 740001 A CMA /PER BLOCK WHICH ARE REPORTED
00353 R 341771 R TAD (1
00354 R 040731 R DAC REPLOP
00355 R 200740 R LAC BLOCK
00356 R 240736 R XOR HASH
00357 R 560746 R READ3 SAD* POINTR
00360 R 741000 A SKP
00361 R 100471 R JMS RDEROR
00362 R 440746 R ISZ POINTR
00363 R 341771 R TAD (1
00364 R 560746 R SAD* POINTR
00365 R 741000 A SKP
00366 R 100471 R JMS RDEROR
00367 R 440746 R ISZ POINTR
00370 R 341771 R TAD (1
00371 R 560746 R SAD* POINTR
00372 R 741000 A SKP
00373 R 100471 R JMS RDEROR
00374 R 440746 R ISZ POINTR
00375 R 341771 R TAD (1
00376 R 560746 R SAD* POINTR
00377 R 741000 A SKP
00400 R 100471 R JMS RDEROR
00401 R 440746 R ISZ POINTR
00402 R 341771 R TAD (1
00403 R 440744 R ISZ LOOP
00404 R 600357 R JMP READ3
00405 R 100537 R READ1 JMS MOVBUF /MOVE THE BUFFER
00406 R 200740 R LAC BLOCK
00407 R 340737 R TAD PRIME
,DEC
00410 R 341773 R TAD (-16000
00411 R 741100 A SPA
00412 R 341774 R TAD (16000
,OCT
00413 R 040740 R DAC BLOCK
00414 R 540751 R SAD START /DONE READING?

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00415 R 741000 A SKP /YES
00416 R 600333 R JMP READ
00417 R 200736 R LAC HASH /CALCULATE NEW HASH FOR NEXT PASS
00420 R 301776 R ADD (677773
00421 R 040736 R DAC HASH
00422 R 200000 R LAC UODSW /MAINTENANCE MODE?
00423 R 501755 R AND (100000
00424 R 740200 A SZA
00425 R 600460 R JMP DONE1 /YES
00426 R 200751 R LAC START
00427 R 341771 R TAD (1 /INCREMENT FIRST BLOCK
,DEC
00430 R 341773 R TAD (-16000 /RAP AROUND?
00431 R 741100 A SPA
00432 R 341774 R TAD (16000 /NO
,OCT
00433 R 040751 R DAC START
00434 R 040740 R DAC BLOCK
00435 R 200000 R LAC UODSW /STAY IN 64 WORD/BLOCK MODE?
00436 R 501777 R AND (040000
00437 R 740200 A SZA
00440 R 600460 R JMP DONE1 /YES, 6 PASSES PER COMPLETE PASS
00441 R 200570 R LAC DSKWC /CALCULATE NEW WORD COUNT
00442 R 744010 A RCL /MULT, BY 2
00443 R 542000 R SAD (-2000 /RAP AROUND?
00444 R 600462 R JMP DONE
00445 R 040570 R DAC DSKWC
00446 R 542001 R SAD (-200 /CALCULATE NEW APPROPRIATE PRIME
00447 R 202002 R LAC (136 /TRACK BY 1, SECTOR BY 6
00450 R 542003 R SAD (-400
00451 R 202004 R LAC (134 /TRACK BY 1, SECTOR BY 12
00452 R 542005 R SAD (-1000
00453 R 202006 R LAC (150 /TRACK BY 1, SECTOR BY 24
00454 R 040737 R DAC PRIME
00455 R 201754 R LAC (BUFF
00456 R 040752 R DAC BUFFER /RESET BUFFER TO START OF LARGE BUFFER
00457 R 600266 R JMP WRITE

/
00460 R 440750 R /DONE1 ISZ RUNNMB /FINISHED?
00461 R 600266 R JMP WRITE
00462 R 100225 R /DONE JMS PUTCHK /YES
00463 R 140021 R DZM ERWC
00464 R 140022 R DZM ERCODE
00465 R 777774 A LAW -4
00466 R 040020 R DAC SYSCOM
00467 R 100170 R JMS MONEXT
00470 R 740040 A HLT /SHOULD NOT RETURN HERE
,EJECT

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00471 R 740040 A RDEROR XX /COMPARE ERROR
00472 R 040747 R DAC RDCHAR
/
00473 R 100225 R RDFERR JMS PUTCHK
00474 R 202007 R LAC (4)
00475 R 040022 R DAC ERCODE
00476 R 777770 A LAW -10
00477 R 040021 R DAC ERWC
00500 R 202010 R LAC (ERCODE+1)
00501 R 040716 R DAC BBTMP2 /POINTER FOR BCDOUT
00502 R 100235 R JMS BCDOUT
00503 R 200746 R LAC POINTR
00504 R 040026 R DAC ERCODE+4
00505 R 200752 R LAC BUFFER
00506 R 740001 A CMA
00507 R 341771 R TAD (1)
00510 R 340746 R TAD POINTR
00511 R 040027 R DAC ERCODE+5
00512 R 220746 R LAC* POINTR
00513 R 040030 R DAC ERCODE+6
00514 R 200747 R LAC RDCHAR
00515 R 040031 R DAC ERCODE+7
/
00516 R 440731 R ISZ REPLOP /DONE REPORTING ERRORS IN THIS BLOCK?
00517 R 600535 R JMP RDREP
00520 R 100225 R JMS PUTCHK /YES
00521 R 777777 A LAW -1
00522 R 040021 R DAC ERWC
00523 R 202011 R LAC (5)
00524 R 040022 R DAC ERCODE
/
00525 R 440742 R ISZ RDFTRY /REREAD?
00526 R 600336 R JMP READ2 /YES
00527 R 100225 R RDFER1 JMS PUTCHK /NO
00530 R 777777 A LAW -1
00531 R 040021 R DAC ERWC
00532 R 202012 R LAC (6)
00533 R 040022 R DAC ERCODE
00534 R 600405 R JMP READ1
/
00535 R 200747 R RDREP LAC RDCHAR /CHECK MORE
00536 R 620471 R JMP* RDEROR
.EJECT

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/ROUTINE TO MOVE BUFFER WITHIN LARGE AVAILABLE BUFFER
/
00537 R 740040 A   MOVBUF  XX
00540 R 200570 R   LAC DSKWC      /CALCULATE NEEDED BUFFER SIZE
00541 R 740001 A   CMA
00542 R 341771 R   TAD (1
00543 R 340752 R   TAD BUFFER      /IS THERE ROOM AVAILABLE TO MOVE?
00544 R 541753 R   SAD BUFEND
00545 R 600550 R   JMP MOVBF1      /NO, RESET IT TO START
00546 R 440752 R   ISZ BUFFER      /YES, INCREMENT IT
00547 R 620537 R   JMP* MOVBUF
00550 R 201754 R   MOVBF1  LAC (BUFF
00551 R 040752 R   DAC BUFFER      /RESET IT
00552 R 620537 R   JMP* MOVBUF

//
00553 R 740040 A   DISK    XX      /RB09 START UP ROUTINE
00554 R 040735 R   DAC FNSAVE
00555 R 200001 R   LAC HRDMAX      /NUMBER OF RETRIES ON HARDWARE ERRORS
00556 R 740001 A   CMA
00557 R 040741 R   DAC ERRCNT
00560 R 750004 A   DISKRP  LAS      /HOLD SWITCH SET
00561 R 500010 R   AND SWITCH
00562 R 741200 A   SNA
00563 R 600566 R   JMP ,+3      /NO
00564 R 100211 R   JMS ARTXIT      /YES
00565 R 600560 R   JMP DISKRP
00566 R 200752 R   LAC BUFFER
00567 R 400726 R   XCT DSLM
00570 R 777700 A   DSKWC  LAW -100
00571 R 400723 R   XCT DSLW
00572 R 200665 R   LAC BINBCD
00573 R 400721 R   XCT DSLD
00574 R 200735 R   LAC FNSAVE
00575 R 400727 R   XCT DSLS
00576 R 100170 R   JMS MONEXT      /GO AWAY UNTIL INTERRUPT
/RETURN HERE ON INTERRUPT
00577 R 200743 R   LAC STAT
00600 R 740100 A   SMA      /ERROR?
00601 R 620553 R   JMP* DISK      /NO
,EJECT

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00602 R 100225 R      JMS PUTCHK      /SYSCOM =1 NOW?
00603 R 200665 R      LAC BINBCD      /NO, CHECK IF LEGAL BCD FORMAT ADDRESS
00604 R 653601 A      LMO!CLAC!LLS+1 /SHOULD BE ZERO
00605 R 744200 A      SZA!CLL
00606 R 600633 R      JMP DISK2
00607 R 660605 A      LLSS+5
00610 R 502013 R      AND (17
00611 R 342014 R      TAD (-12      /9 DEC, OR LESS
00612 R 740100 A      SMA
00613 R 600633 R      JMP DISK2
00614 R 640604 A      LLS+4
00615 R 502013 R      AND (17
00616 R 342014 R      TAD (-12
00617 R 744100 A      SMA!CLL
00620 R 600633 R      JMP DISK2
00621 R 640604 A      LLS+4
00622 R 502013 R      AND (17
00623 R 342015 R      TAD (-10      /7 OR LESS
00624 R 744100 A      SMA!CLL
00625 R 600633 R      JMP DISK2
00626 R 640604 A      LLS+4
00627 R 502013 R      AND (17
00630 R 342014 R      TAD (-12
00631 R 745100 A      SPA!CLL
00632 R 600644 R      JMP DISK3      /GOOD ADDRESS
00633 R 777775 A      LAW =3
00634 R 040021 R      DAC ERWC
00635 R 202016 R      LAC (2)
00636 R 040022 R      DAC ERCODE
00637 R 200743 R      LAC STAT
00640 R 040023 R      DAC ERCODE+1
00641 R 200665 R      LAC BINBCD
00642 R 040024 R      DAC ERCODE+2
00643 R 600655 R      JMP DISK4

DISK2
00644 R 201771 R      LAC (1)
00645 R 040022 R      DAC ERCODE
00646 R 777773 A      LAW =5
00647 R 040021 R      DAC ERWC
00650 R 200743 R      LAC STAT
00651 R 040023 R      DAC ERCODE+1
00652 R 202017 R      LAC (ERCODE+2
00653 R 040716 R      DAC BBTMP2
00654 R 100235 R      JMS BCDOUT

DISK3
00655 R 440741 R      ISZ ERRCNT      /RETRY?
00656 R 600560 R      JMP DISKRP      /YES
00657 R 100225 R      JMS PUTCHK
00660 R 202020 R      LAC (3)      /RETRIED AS MANY TIMES
00661 R 040022 R      DAC ERCODE      /AS SPECIFIED BY HRDMAX
00662 R 777777 A      LAW =1
00663 R 040021 R      DAC ERWC
00664 R 620553 R      JMP# DISK

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/TITLE RB09 BINARY TO BCD CONVERTER

00665 R 740040 A  
 00666 R 744000 A  
 00667 R 653323 A  
 00670 R 000012 A  
 00671 R 040715 R  
 00672 R 641323 A  
 00673 R 000010 A  
 00674 R 040716 R  
 00675 R 641323 A  
 00676 R 000012 A  
 00677 R 040717 R  
 00700 R 641002 A  
 00701 R 342014 R  
 00702 R 740100 A  
 00703 R 342012 R  
 00704 R 340670 R  
 00705 R 660704 A  
 00706 R 300717 R  
 00707 R 660704 A  
 00710 R 300716 R  
 00711 R 660704 A  
 00712 R 300715 R  
 00713 R 300720 R  
 00714 R 620665 R

/  
 BINBCD XX  
 CLL  
 IDIV  
 .12 12  
 DAC BBTMP1  
 CLAC!DIV  
 .10 10  
 DAC BBTMP2  
 CLAC!DIV;  
 DAC BBTMP3  
 LACQ  
 TAD (-12  
 SMA  
 TAD (6  
 TAD ,12  
 ALSS+4  
 ADD BBTMP3  
 ALSS+4  
 ADD BBTMP2  
 ALSS+4  
 ADD BBTMP1  
 ADD MAITSC  
 JMP\* BINBCD

12

/0 UNLESS RUNNING MAINT, TEST

00715 R 000000 A  
 00716 R 000000 A  
 00717 R 000000 A

/  
 BBTMP1 0  
 BBTMP2 0  
 BBTMP3 0

00720 R 000000 A

/  
 MAITSC 0  
 .EJECT

/200 IF RUNNING MAINTENANCE TEST

```

/TITLE RB09 IOT'S
00721 R 707104 A   DSLD  707104   /LOAD DISK ADDRESS
00722 R 707121 A   DSSF  707121   /SKIP ON FLAG
00723 R 707124 A   DSLW  707124   /LOAD WORD COUNT
00724 R 707132 A   DSRS  707132   /READ STATUS
00725 R 707141 A   DSCS  707141   /CLEAR STATUS
00726 R 707142 A   DSLM  707142   /LOAD CORE ADDRESS
00727 R 707144 A   DSLS  707144   /LOAD STATUS
/
/TITLE VARIABLES
00730 R 000000 A   ACSAVE 0   /CONTENTS OF AC IF API, 0 IF PI
00731 R 000000 A   REPLOP 0
00732 R 000000 A   SCSAVE 0   /STEP COUNTER
00733 R 000000 A   MQSAVE 0   /MQ
00734 R 000000 A   SVEXIT 0   /SAVE EXIT WHEN HOLDING ON SWITCH
00735 R 000000 A   FNSAVE 0   /FUNCTION, READ OR WRITE
00736 R 000000 A   HASH   0
00737 R 000127 A   PRIME 127  /INCREMENT TRACK BY 1, SEGMENT BY 7
00740 R 000000 A   BLOCK 0   /TRACK ADDRESS
00741 R 000000 A   ERRCNT 0   /NUMBER OF RB09 RETRIES
00742 R 000000 A   RDFTRY 0
00743 R 000000 A   STAT  0   /RB09 STATUS WORD
00744 R 000000 A   LOOP   0
00745 R 000000 A   ARTFLG 0   /0 IF EXPECTING FLAG ENTRY
                                /NON-ZERO IF EXPECTING ARTIFICIAL ENTRY
00746 R 000000 A   POINTR 0
00747 R 000000 A   RDCHAR 0   /EXPECTED CHARACTER ON COMPARE ERROR
00750 R 000000 A   RUNNMB 0   /PASS COUNTER
00751 R 000000 A   START  0   /FIRST BLOCK OF TEST
00752 R 000753 R   BUFFER BUFF   /FIRST WORD OF MOVING BUFFER
00753 R          A   BUFF  ,BLOCK 1000
01753 R 001753 R   BUFEND BUFEND
                                ,EJECT

```



.L TORG

01754 R 000753 R #L  
01755 R 100000 A #L  
01756 R 000120 A #L  
01757 R 000200 A #L  
01760 R 000127 A #L  
01761 R 000266 R #L  
01762 R 400000 A #L  
01763 R 000007 A #L  
01764 R 000010 A #L  
01765 R 000011 A #L  
01766 R 000077 A #L  
01767 R 640402 A #L  
01770 R 640477 A #L  
01771 R 000001 A #L  
01772 R 007000 A #L  
01773 R 740600 A #L  
01774 R 037200 A #L  
01775 R 006000 A #L  
01776 R 677773 A #L  
01777 R 040000 A #L  
02000 R 776000 A #L  
02001 R 777600 A #L  
02002 R 000136 A #L  
02003 R 777400 A #L  
02004 R 000134 A #L  
02005 R 777000 A #L  
02006 R 000150 A #L  
02007 R 000004 A #L  
02010 R 000023 R #L  
02011 R 000005 A #L  
02012 R 000006 A #L  
02013 R 000017 A #L  
02014 R 777766 A #L  
02015 R 777770 A #L  
02016 R 000002 A #L  
02017 R 000024 R #L  
02020 R 000003 A #L  
000000 R

SIZE=02023

.END UODSW  
NO ERROR LINES



