

,TITLE RANDOM NUMBER READER TEST FOR SYSTEM EXERCISER
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 /DIGITAL EQUIPMENT CORPORATION, MAYNARD, MASS,
 /EARL L. BOUSE
 ,EBREL
 /REV, DATE 7-27-71

700101 A RSF=700101
 700102 A RCF=700102
 700104 A RSA=700104
 700112 A RRB=700112
 700144 A RSB=700144
 705512 A RPL=705512
 707764 A EBA=707764
 707702 A EEM=707702

00000 R 600010 A UQDSW 600010
 00001 R 000000 A 0
 00002 R 000000 A 0
 00003 R 000000 A 0
 00004 R 000111 R ,DSA PSERV
 00005 R 000032 R ,DSA PINIT
 00006 R 220422 A ,SIXBT ,RDRTST
 00007 R 242324 A
 00010 R 000020 A 20
 00011 R A ,BLOCK 7

/I/O DEVICE WITH API

/MASK FOR CHAIN MODE

00020 R 000000 A SYSERR 0
 00021 R 000000 A 0
 00022 R 000000 A ERCODE 0
 00023 R 000000 A 0
 00024 R 000000 A 0
 00025 R 000000 A 0
 00026 R 000000 A 0
 00027 R 000000 A 0
 00030 R 000000 A 0
 00031 R 000000 A 0

/ERROR INDICATOR
 /WORD COUNT FOR DATA WORDS
 /ERROR CODE
 /
 /THE SEVEN LOCATIONS
 /FOLLOWING THE ERROR CODE
 /ARE FOR DATA,

,EJECT

```
/AC SWITCH 13 INHIBITS THE READER TEST
/THE RANDOM NUMBER READER TEST IS RUN USING A TAPE PUNCHED BY THE
/RANDOM NUMBER PUNCH TEST, THE TAPE IS READ AT BOTH FULL SPEED AND
/AT RANDOM STALL INTERVALS, IF A READ ERROR IS ENCOUNTERED IT IS TYP-
/ED OUT AND A STALL IS SETUP ALLOWING THE OPERATOR TO REMOVE THE
/TAPE AND VERIFY IF IT WAS A READ OR A PUNCH ERROR, OR THE ERROR MAY
/BE IGNORED AND THE TEST WILL RESUME AFTER THE STALL DELAY, IF THE TAPE
/IS REMOVED, IT MUST BE RELOADED,
/FOUR (4) POSSIBLE READER ERRORS MAY OCCUR;
/ERROR CODE:
/      1) NO TAPE IN READER
/      2) RSF SKIPPED WITH THE IORS BIT CLEAR
/      3) ILL API INTERRUPT, API INTERRUPTED WITH THE READ FLAG CLEAR
/      4) READ DATA ERROR;
/EXAMPLE:
/
/ TEST   TST NO,   COLUMNS READ   READ MODE   GOOD DATA   READ DATA
/ RDRTST 000004   010231 (8)       700112     573452     573572
/      ,EJECT
```

/INITIALIZE THE READER TEST

```

/
/
PINIT 0
00032 R 000000 A      EBA
00033 R 707764 A      EEM
00034 R 707702 A      LAC
00035 R 200032 R      DAC
00036 R 040111 R      DZM
00037 R 140020 R      DZM
00040 R 140021 R      DZM
00041 R 140022 R      DZM
00042 R 140510 R      DZM
00043 R 200522 R      LAC
00044 R 040124 R      DAC
00045 R 200523 R      LAC
00046 R 040502 R      DAC
00047 R 200524 R      LAC
00050 R 040504 R      DAC
00051 R 140505 R      DZM
00052 R 140512 R      DZM
00053 R 140515 R      DZM
00054 R 140507 R      DZM
00055 R 200525 R      LAC
00056 R 040476 R      DAC
00057 R 040500 R      DAC
00060 R 200526 R      LAC
00061 R 040477 R      DAC
00062 R 040501 R      DAC
00063 R 200521 R      LAC
00064 R 540527 R      SAD
00065 R 100102 R      JMS
00066 R 700314 A      IORS
00067 R 500530 R      AND
00070 R 741200 A      SNA
00071 R 600075 R      JMP
00072 R 777771 A      EXTPNT
00073 R 040020 R      DAC
00074 R 620032 R      JMP#
00075 R 740000 A      PINIT1
00076 R 140506 R      DZM
00077 R 100444 R      JMS
00100 R 700104 A      RSA
00101 R 620032 R      JMP#
00102 R 000000 A      PINIT2
00103 R 700314 A      IORS
00104 R 500530 R      AND
00105 R 741200 A      SNA
00106 R 600072 R      JMP
00107 R 140521 R      DZM
00110 R 620102 R      JMP#
      .EJECT

PINIT
PSERV
SYSERR
ERCODE=1
ERCODE
RMODE
(PSERA
DSTSW1
(777000
RANSTL
(774000
COLCNT
RCNT
ERFLAG
FLGDRV
RDCHK
(731420
RANA
RANX
(015610
RANB
RANY
WAIT
(=7
PINIT2
(1000
SNA
JMP
PINIT1
=7
SYSERR
PINIT
NOP
WAIT1
HOLD
PINIT
0
IORS
AND
(1000
SNA
JMP
EXTPNT
DZM
WAIT
PINIT2

```

/ERROR INDICATOR

/WORD COUNT

/ERROR CODE

/SET READ MODE ALPHA

/DESTINATION SWITCH

/1ST RANDOM STALL COUNT

/FULL SPEED READ COUNTER

/SET NO OF COLUMNS TO READ

/SWITCH FOR ERROR DETECTOR

/INITIALIZE RANDOM NO, A

/INITIALIZE RANDOM NO, B

/WAITING FOR NOTAPE FLAG?

/YES, SEE IF NOW SET,

/TEST FOR READER NO TAPE

/TAPE OK, READ

/INDICATES TO MONITOR TO EXIT, DO NOT

/TYPE AN ERROR AND ENTER AGAIN VIA PINIT

/WAIT FOR TAPE

/CHANGES TO (JMS TIMEOUT

/CLEAR THE NO TAPE SWITCH,

/EXAMINE THE HOLD SWITCH

/START THE READ

/IS NOTAPE FLAG SET?

/NO, EXIT =7

/YES, CLEAR WAIT SWITCH

/SERVICE ENTRANCE FOR THE READER TEST

```

00111 R 000000 A PSERV /
00112 R 707764 A EBA
00113 R 707702 A EEM
00114 R 040511 R DAC SAVAC /SAVE THE CONTENTS OF THE AC
00115 R 200506 R LAC WAIT1
00116 R 540527 R SAD (=7 /WAITING FOR TAPE?
00117 R 620111 R JMP* PSERV /YES,EXIT
00120 R 200515 R LAC FLGDRV
00121 R 740200 A SZA /WERE WE READING?
00122 R 100440 R JMS FLAGUP /YES,CHECK IF FINISHED
00123 R 620124 R JMP* DSTSW1
00124 R 000000 A DSTSW1 /=TO STALL OR NORMAL READ
00125 R 700314 A PSERA /IF THE READER FLAG IS NOT UP, RETURN
00126 R 040021 R DAC ERCODE=1
00127 R 500530 R AND (1000) /TO MONITOR WITH AC=-1
00130 R 740200 A SZA /IF THE FLAG IS UP, DO THE NEXT
00131 R 600267 R JMP NOTAPE /OPERATION THEN EXIT WITH AC=0
00132 R 700101 A RSF /TEST READER FLAG
00133 R 600262 R JMP NOFLAG
00134 R 200021 R LAC ERCODE=1
00135 R 500531 R AND (200000) /READER FLAG
00136 R 741200 A SNA
00137 R 600312 R JMP ERROR2 /RSF SKIPPED BUT STATUS BIT CLEAR
00140 R 100152 R PSERV,1 JMS RDTST /READER INTERRUPT, READ DATA
00141 R 200532 R EXIT LAC (JMS TIMEOUT
00142 R 040075 R DAC PINIT1
00143 R 200533 R LAC (700000
00144 R 040516 R DAC TIME /INITIALIZE A STALL COUNT
00145 R 705512 A RPL /TEST FOR API ENABLED
00146 R 751100 A SPA,CLA
00147 R 200511 R LAC SAVAC /API ON, RESTORE THE AC
00150 R 703344 A DBR
00151 R 620111 R JMP* PSERV
/
/
00152 R 000000 A RDTST /
00153 R 100444 R JMS HOLD /EXAMINE HOLD SWITCH
00154 R 700112 A RRB
00155 R 040474 R DAC DATA /STORE READER BUFFER
00156 R 200507 R LAC RDCHK
00157 R 740200 A SZA /HAD A SUCCESSFUL READ?
00160 R 600166 R JMP READ /YES
00161 R 200474 R LAC DATA /NO
00162 R 740200 A SZA /THIS READ OK?
00163 R 600166 R JMP READ /YES, COMPARE READ DATA
00164 R 700104 A RSA /NO, READ THE NEXT COLUMN
00165 R 620152 R JMP* RDTST
,EJECT

```

/READ SUBROUTINE

```

00166 R 777777 A READ /
00167 R 040507 R DAC =1 /INDICATES SUCCESSFUL READ
00170 R 440505 R ISZ RCNT /COUNT COLUMNS READ
00171 R 740000 A NOP
00172 R 200505 R LAC RCNT
00173 R 540534 R SAD (030777 /FINISHED READING?
00174 R 600232 R JMP DONE /YES, EXIT
00175 R 100250 R JMS RANDOM /NO, GET RANDOM NUMBER
00176 R 040475 R DAC DATNUM
00177 R 200510 R LAC RMODE
00200 R 740200 A SZA /DETERMINE READ MODE
00201 R 600242 R JMP TRSB /READ MODE BINARY
00202 R 200475 R LAC DATNUM /READ MODE ALPHA
00203 R 500535 R AND (377 /MASK BITS 10=17
00204 R 040475 R DAC DATNUM /SAVE THE MASKED NUMBER
00205 R 540474 R SAD DATA /COMPARE READ DATA TO RANDOM NUMBER
00206 R 741000 A SKP /READ IS = TO THE NUMBER
00207 R 100321 R JMS ERRDAI /NO, GO TO DATA ERROR
00210 R 700144 A RSB /YES, READ THE NEXT COLUMN
00211 R 200510 R RRET LAC RMODE
00212 R 740001 A CMA /COMPLIMENT THE READ MODE
00213 R 040510 R DAC RMODE
00214 R 777777 A LAW =1
00215 R 040515 R DAC FLGDRV /INDICATES FLAG DRIVEN
00216 R 200001 R LAC UODSW+1
00217 R 740020 A RAR
00220 R 741400 A SZL
00221 R 620152 R JMP* RDTST
00222 R 440504 R ISZ COLCNT /COUNTER FOR FULL SPEED READ
00223 R 620152 R JMP* RDTST
00224 R 200536 R LAC (STALL
00225 R 040124 R DAC DSTSW1 /INITIALIZE THE STALL ROUTINE
00226 R 200502 R LAC RANSTL /INITIALIZE A NO STALL COUNT
00227 R 340537 R TAD (=100
00230 R 040513 R DAC NOSTALL
00231 R 620152 R JMP* RDTST
/
00232 R 700112 A DONE RRB
00233 R 777774 A LAW =4 /DONE, EXIT
00234 R 040020 R DAC SYSERR
00235 R 140021 R DZM SYSERR+1
00236 R 777771 A LAW =7
00237 R 040521 R DAC WAIT /SET NOTAPE SWITCH
00240 R 040506 R DAC WAIT1
00241 R 600141 R JMP EXIT
,EJECT

```

```

/READ BINARY
00242 R 200475 R TRSB / LAC DATNUM /GET RANDOM NUMBER
00243 R 540474 R SAD DATA /COMPARE READ TO RANDOM NUMBER
00244 R 741000 A SKP /IS READ = TO NUMBER
00245 R 100321 R JMS ERRDAT /NO, GO TO DATA ERROR
00246 R 700104 A RSA /YES, READ NEXT COLUMN
00247 R 600211 R JMP RRET
/
/RANDOM NUMBER SUBROUTINE, EXIT WITH NUMBER IN THE AC
00250 R 000000 A RANDOM 0
00251 R 754000 A CLLICLA
00252 R 340476 R TAD RANA
00253 R 340477 R TAD RANB
00254 R 040476 R DAC RANA
00255 R 750010 A GLK
00256 R 340476 R TAD RANA
00257 R 340477 R TAD RANB
00260 R 040477 R DAC RANB
00261 R 620250 R JMP* RANDOM
/
/NO FLAG FROM READER, TEST THAT API IS OFF
00262 R 705512 A NOFLAG RPL /TEST IF API IS ON
00263 R 741100 A SPA
00264 R 600353 R JMP ERROR3 /NO READER FLAG, API INTERRUPTED
00265 R 777777 A LAW =1 /NO READER FLAG, API OFF
00266 R 620111 R JMP* PSERV /NORMAL EXIT
/
/ERROR 01; NO TAPE IN READER
00267 R 700112 A NOTAPE RRB /CLEAR THE READER FLAG
00270 R 777775 A LAW =3
00271 R 040020 R DAC SYSERR
00272 R 200540 R LAC (1 /ERROR CODE 01; NO TAPE
00273 R 040022 R DAC ERCODE
00274 R 777777 A LAW =1 /ONE DATA WORD TO BE PRINTED
00275 R 040021 R DAC ERCODE=1
00276 R 140515 R DZM FLGDRV
00277 R 200541 R LAC (EXTNTP
00300 R 040124 R DAC DSTSW1
00301 R 600141 R JMP EXIT
.EJECT

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00302 R 200020 R EXTNTP LAC SYSERR
00303 R 540542 R SAD (=3 /TYPED ERROR YET?
00304 R 600141 R JMP EXIT
00305 R 140021 R DZM SYSERR+1
00306 R 777771 A LAW =7
00307 R 040020 R DAC SYSERR
00310 R 040506 R DAC WAIT1
00311 R 600141 R JMP EXIT
/
/ERROR2 IS WHEN RSP SKIPPED BUT STATUS BIT CLEAR
/
00312 R 200543 R ERROR2 LAC (=2
00313 R 040022 R DAC ERCODE /ERROR CODE 02
00314 R 777777 A LAW =1
00315 R 040020 R DAC SYSERR
00316 R 777776 A LAW =2
00317 R 040021 R DAC ERCODE=1
00320 R 600141 R JMP EXIT
/
/
/DATA ERROR, READ DATA IS DIFFERENT FROM EXPECTED DATA
/
ERRDAT 0
00321 R 000000 A LAC (=4 /ERROR CODE 04; DATA ERROR
00322 R 200544 R DAC ERCODE
00323 R 040022 R LAW =5 /FIVE DATA ERRORS TO BE PRINTED
00324 R 777773 A DAC ERCODE=1
00325 R 040021 R LAW =2
00326 R 777776 A DAC SYSERR
00327 R 040020 R LAC RCNT /COLUMNS READ
00330 R 200505 R DAC ERCODE+1
00331 R 040023 R LAC RMODE /DETERMINE READ MODE
00332 R 200510 R SZAICLA
00333 R 750200 A LAC (=40 /READ BINARY, 700144
00334 R 200545 R TAD (=700104 /READ ALPHA, 700104
00335 R 340546 R DAC ERCODE+2
00336 R 040024 R LAC DATNUM /GOOD DATA
00337 R 200475 R DAC ERCODE+3
00340 R 040025 R LAC DATA /READ DATA
00341 R 200474 R DAC ERCODE+4
00342 R 040026 R LAC (=750000
00343 R 200547 R DAC LOOP /SET UP A WAIT COUNT
00344 R 040517 R LAW =3
00345 R 777775 A DAC LOOP1
00346 R 040520 R LAC (=SRVER
00347 R 200550 R DAC DSTSW1 /SET DESTINATION SWITCH
00350 R 040124 R DZM FLGDRY /CLEAR FLAG SWITCH
00351 R 140515 R JMP
00352 R 600141 R .EJECT

```

/ERROR3, API INTERRUPT OCCURED WITH NO READER FLAG SET

```

00353 R 777777 A ERROR3 LAW =1 /SET UP ERROR 3
00354 R 040020 R DAC SYSERR
00355 R 200551 R LAC (3 /ERROR CODE 03; API ERROR
00356 R 040022 R DAC ERCODE
00357 R 777777 A LAW =1 /ONE DATA WORD TO BE PRINTED
00360 R 040021 R DAC ERCODE=1
00361 R 600141 R JMP EXIT

```

/WAIT FOR ERROR TO BE TYPED, AND STALL BEFORE CONTINUING READ

```

00362 R 200020 R SRVERR LAC SYSERR
00363 R 540552 R SAD (=2 /ERROR TYPED YET?
00364 R 600141 R JMP EXIT /NO,EXIT
00365 R 700314 A IORS /TEST FOR NO TAPE FLAG
00366 R 500530 R AND (1000
00367 R 740200 A SZA /IS FLAG SET?
00370 R 600267 R JMP NOTAPE /YES, PRINT CODE
00371 R 440517 R ISZ LOOP /NO, START DELAY
00372 R 600422 R JMP STLEXT /EXIT =5
00373 R 440520 R ISZ LOOP1
00374 R 600422 R JMP STLEXT
00375 R 200522 R LAC (PSERA
00376 R 040124 R DAC DSTSW1 /RESET DESTINATION SWITCH
00377 R 200523 R LAC (777000
00400 R 040504 R DAC COLCNT /REINIT FULL SPEED READ
00401 R 100444 R JMS HOLD /TEST FOR HOLD SWITCH
00402 R 620321 R JMP# ERRDAT /READ NEXT COLUMN

```

/RANDOM STALL ROUTINE

```

00403 R 200515 R STALL LAC FLGDRV /FLAG DRIVEN ?
00404 R 740200 A SZA
00405 R 700112 A RRB /YES, CLEAR READER FLAG
00406 R 140515 R DZM FLGDRV /NO, ENTERED SYSERR=5
00407 R 440502 R ISZ RANSTL /COUNTER FOR STALL NO,
00410 R 600422 R JMP STLEXT /CONTINUE STALL
00411 R 100425 R JMS GENRAN /SET UP FOR NEXT STALL TIME
00412 R 040502 R DAC RANSTL
00413 R 440513 R ISZ NOSTAL /CHECK FOR NO STALL
00414 R 600140 R JMP PSERV,1
00415 R 340553 R TAD (=300
00416 R 040504 R DAC COLCNT /SET UP NO STALL COUNT
00417 R 200522 R LAC (PSERA
00420 R 040124 R DAC DSTSW1 /CLEAR THE STALL SWITCH
00421 R 600140 R JMP PSERV,1

```

```

00422 R 777773 A STLEXT LAW =5 /CONTINUE STALL
00423 R 040020 R DAC SYSERR
00424 R 600141 R JMP EXIT

```

.EJECT

/GENERATE RANDOM STALL NO.; EXIT WITH NO, IN THE AC

```

00425 R 000000 A GENRAN 0
00426 R 340500 R TAD RANX
00427 R 340501 R TAD RANY
00430 R 040500 R DAC RANX
00431 R 750010 A GLK
00432 R 340500 R TAD RANX
00433 R 340501 R TAD RANY
00434 R 040501 R DAC RANY
00435 R 500554 R AND (17
00436 R 740001 A CMA
00437 R 620425 R JMP* GENRAN
  
```

/TEST THAT THE READER HAS FINISHED READING BEFORE CONTINUING,

```

00440 R 000000 A FLAGUP 0
00441 R 700101 A RSF /TEST FOR READER FLAG
00442 R 600262 R JMP NOFLAG /READER IS NOT FINISHED
00443 R 620440 R JMP* FLAGUP /FLAG UP, CONTINUE
  
```

/TEST AC SWITCH 13 WHICH INHIBITS THE READER TEST

```

00444 R 000000 A HOLD 0
00445 R 750004 A LAS
00446 R 500555 R AND (20 /AC SW 13
00447 R 741200 A SNA /IS SWITCH UP?
00450 R 620444 R JMP* HOLD /NO, CONTINUE
00451 R 200124 R LAC DSTSW1 /YES
00452 R 040503 R DAC SAVDST /SAVE RETURN ADDRESS
00453 R 200556 R LAC (HOLD,1
00454 R 040124 R DAC DSTSW1
00455 R 200515 R LAC FLGDRV
00456 R 741200 A SNA /FLAG DRIVEN?
00457 R 600422 R JMP STLEXT /NO, EXIT =5
00460 R 700101 A RSF /YES, IS READER FINISHED?
00461 R 600422 R JMP STLEXT /NO
00462 R 140515 R DZM FLGDRV
00463 R 700112 A RRB /YES, CLEAR READER FLAG
00464 R 600422 R JMP STLEXT /EXIT

00465 R 200503 R HOLD,1 LAC SAVDST
00466 R 040124 R DAC DSTSW1 /RESTORE THE RETURN ADDRESS
00467 R 600445 R JMP HOLD+1 /RETEST SWITCH
  
```

,EJECT

/WAIT FOR 10 SEC. AFTER NOTAPE FLAG IS CLEARED

00470	R	000000	A
00471	R	440516	R
00472	R	600072	R
00473	R	620470	R

TIMOUT

/
ISZ
JMP
JMP*
/

TIME
EXTPNT
TIMOUT

/EXIT VIA -7
/RESTART READ TEST

00474	R	000000	A
00475	R	000000	A
00476	R	000000	A
00477	R	000000	A
00500	R	000000	A
00501	R	000000	A
00502	R	000000	A
00503	R	000000	A
00504	R	000000	A
00505	R	000000	A
00506	R	000000	A
00507	R	000000	A
00510	R	000000	A
00511	R	000000	A
00512	R	000000	A
00513	R	000000	A
00514	R	000000	A
00515	R	000000	A
00516	R	000000	A
00517	R	000000	A
00520	R	000000	A
00521	R	000000	A

DATA
DATNUM
RANA
RANB
RANX
RANY
RANSTL
SAVDST
COLCNT
RCNT
WAIT1
RDCHK
RMODE
SAVAC
ERFLAG
NOSTAL
NTAPFG
FLGDRV
TIME
LOOP
LOOP1
WAIT

.EJECT

END UQDSW

000000 R
00522 R 000125 R #L
00523 R 777000 A #L
00524 R 774000 A #L
00525 R 731420 A #L
00526 R 015610 A #L
00527 R 777771 A #L
00530 R 001000 A #L
00531 R 200000 A #L
00532 R 100470 R #L
00533 R 700000 A #L
00534 R 030777 A #L
00535 R 000377 A #L
00536 R 000403 R #L
00537 R 777700 A #L
00540 R 000001 A #L
00541 R 000302 R #L
00542 R 777775 A #L
00543 R 000002 A #L
00544 R 000004 A #L
00545 R 000040 A #L
00546 R 700104 A #L
00547 R 750000 A #L
00550 R 000362 R #L
00551 R 000003 A #L
00552 R 777776 A #L
00553 R 777500 A #L
00554 R 000017 A #L
00555 R 000020 A #L
00556 R 000465 R #L

SIZE=00560

NO ERROR LINES

COLCNT	00504	R	DATA	00474	R	DATNUM	00475	R	DONE	00232	R
DSTSW1	00124	R	EBA	707764	A	EEM	707702	A	ERCODE	00022	R
ERFLAG	00512	R	ERRDAT	00321	R	ERROR2	00312	R	ERROR3	00353	R
EXIT	00141	R	EXTNTP	00302	R	EXTPNT	00072	R	FLAGUP	00440	R
FLGDRV	00515	R	GENRAN	00425	R	HOLD	00444	R	HOLD,1	00465	R
LOOP	00517	R	LOOP1	00520	R	NOFLAG	00262	R	NOSTAL	00513	R
NOTAPE	00267	R	NTAPFG	00514	R	PINIT	00032	R	PINIT1	00075	R
PINIT2	00102	R	PSERA	00125	R	PSEPV	00111	R	PSEPV,	00140	R
RANA	00476	R	RANB	00477	R	RANDOM	00250	R	RANSTL	00502	R
RANX	00500	R	RANY	00501	R	RCF	700102	A	RCNT	00505	R
RDCHK	00507	R	RDST	00152	R	READ	00166	R	RMODE	00510	R
RPL	705512	A	RRB	700112	A	RRET	00211	R	RSA	700104	A
RSB	700144	A	RSF	700101	A	SAVAC	00511	R	SAVDST	00503	R
SRVERR	00362	R	STALL	00403	R	STLEXT	00422	R	SYSERR	00020	R
TIME	00516	R	TIMOUT	00470	R	TRSB	00242	R	UODSW	00000	R
WAIT	00521	R	WAIT1	00506	R						

UODSW	00000	R	SYSERR	00020	R	ERCODE	00022	R	PINIT	00032	R
EXTPNT	00072	R	PINIT1	00075	R	PINIT2	00102	R	PSERV	00111	R
DSTSW1	00124	R	PSERA	00125	R	PSERV,	00140	R	EXIT	00141	R
RDTST	00152	R	READ	00166	R	RRET	00211	R	DONE	00232	R
TRSB	00242	R	RANDOM	00250	R	NOFLAG	00262	R	NOTAPE	00267	R
EXTNTP	00302	R	ERROR2	00312	R	ERRDAT	00321	R	ERROR3	00353	R
SRVERR	00362	R	STALL	00403	R	STLEXT	00422	R	GENRAN	00425	R
FLAGUP	00440	R	HOLD	00444	R	HOLD,1	00465	R	TIMOUT	00470	R
DATA	00474	R	DATNUM	00475	R	RANA	00476	R	RANB	00477	R
RANX	00500	R	RANY	00501	R	RANSTL	00502	R	SAVDST	00503	R
COLCNT	00504	R	RCNT	00505	R	WAIT1	00506	R	RDCHK	00507	R
RMODE	00510	R	SAVAC	00511	R	ERFLAG	00512	R	NOSTAL	00513	R
NTAPFG	00514	R	FLGDRV	00515	R	TIME	00516	R	LOOP	00517	R
LOOP1	00520	R	WAIT	00521	R	RSF	700101	A	RCF	700102	A
RSA	700104	A	RRB	700112	A	RSB	700144	A	RPL	705512	A
EEM	707702	A	EBA	707764	A						