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SEQ 0001

.RFM -

IDENTIFICATION

PRODUCT CODE: AC-E899D-MC
PRODUCT NAME: CXNCADO NC-11A MODULE
PRODUCT DATE: SEPTEMBER 1978
MAINTAINER: DEC/X11 SUPPORT GROUP

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1. ABSTRACT

"NCA" IS AN "IOMODR" THAT EXERCISES ONE NC-11A INTERFACE. THE NC-11A INTERFACE DOES MEMORY INCREMENTS VIA NPR UNTIL A WORD OR BYTE REACHES MAXIMUM CAPACITY AND ATTEMPS TO OVERFLOW. AT THIS TIME AN INTERRUPT IS GENERATED AT BR LEVEL 7. THE INTERFACE ALSO DOES TRANSFERS OF DATA TO SERIAL LOCATIONS IN CORE VIA NPR. THIS MODE IS TERMINATED BY A WORD COUNT OVERFLOW AND CONSEQUENT INTERRUPT. THE RATE OF INCREMENT OR TRANSFER IS SET BY A VARIABLE SPEED CLOCK, WHICH IS TURNED ON BY THE SWITCH ON THE BACK OF THE INTERFACE. THIS SWITCH MUST BE ON TO RUN THIS MODULE.

* NOTE: DATA LATE ERRORS OCCUR WHEN RUNNING ON PDP-11/20 CPU *

2. REQUIREMENTS

HARDWARE: NC-11A INTERFACE WITH MAINTENANCE SWITCH IN THE "ON" POSITION.
STORAGE: NCA REQUIRES:

1. DECIMAL WORDS: 2519
2. OCTAL WORDS: 04727
3. OCTAL BYTES: 11656

3. PASS DEFINITION

ONE PASS OF NCA MODULE CONSISTS OF FIFTY ITERATIONS OF EACH BASIC TEST SEQUENCE, WHICH RESULTS IN:

240 PROGRAM INTERRUPTS - 3,404,750 NON-PROCESSOR REQUESTS.

4. EXECUTION TIME

NCA RUNNING ALONE ON PDP-11/10 TAKES APPROXIMATELY 30 SECONDS.

5. CONFIGURATION REQUIREMENTS

DEFAULT PARAMETERS:

DEVADR: 164000, VECTOR: 270, BR1: 7, DEVcnt: 1

REQUIRED PARAMETERS:

ONLY IF PDP-11/20 CPU TYPE (REF. TO 8.)

6. DEVICE/OPTION SETUP

THE NC-11A MUST HAVE THE MAINTENANCE SWITCH IN THE "ON" POSITION.

7. MODULE OPERATION

THE FIRST MODE OF OPERATION IS WORD INCREMENT MODE.
THIS MODE IS REPEATED FOR 50 INTERATIONS. UPON COMPLETION,
ODD BYTE OVERFLOW MODE IS ENABLED FOR 50 INTERATIONS.
THIS INTURN ENABLES THE EVEN BYTE MODE FOR 50 INTERATIONS.
THIS INTURN ENABLES THE LIST MODE FOR 50 INTERATIONS.
UPON COMPLETION, AN END OF PASS IS REPORTED AND THE MODULE IS RESTARTED.

8. OPERATION OPTIONS

SR1 IS USED TO INHIBIT TESTING MODES OF OPERATION OF THE NC11A.
BITS 0 THRU 2 SHOULD BE SET TO A ONE IF RUNNING ON PDP-11/20 CPU.

SR1 BIT0 = 1 INHIBIT WORD INCREMENT MODE.
SR1 BIT1 = 1 INHIBIT ODD BYTE INCREMENT MODE.
SR1 BIT2 = 1 INHIBIT EVEN BYTE INCREMENT MODE.
SR1 BIT3 = 1 INHIBIT LIST MODE.

9. NON STANDARD PRINTOUTS

NONE. ALL PRINTOUTS HAVE STANDARD MEANINGS AS REPRESENTED IN
DEC/X11 DOCUMENTATION.

10. MODULE TEST ENVIRONMENT

THE NCA MODULE IS KNOWN TO OPERATE UNDER THIS ENVIRONMENT:

| | | | |
|--------|------------------------|--------|------------------------|
| #1 | PDP-11/20 CPU WITH 28K | #2 | PDP-11/40 CPU WITH 28K |
| TC11 | 2 DRIVES | RK11-D | 1 DRIVE |
| TM11 | 1 DRIVE | TM11 | 1 DRIVE |
| TA11 | 2 DRIVES | NC11A | 1 UNIT |
| NC11A | 1 UNIT | AA11 | 1 UNIT |
| LP11 | 1 UNIT | | |
| AA11 | 1 UNIT | | |
| | | | |
| #3 | PDP-11/10 CPU WITH 16K | #4 | PDP-11/34 CPU WITH 28K |
| RK11-D | 1 DRIVE | TC11 | 2 DRIVES |
| TM11 | 2 DRIVES | TM11 | 1 DRIVE |
| NC11A | 1 UNIT | TA11 | 2 DRIVES |
| AA11 | 1 UNIT | NC11A | 1 UNIT |
| RW11L | 1 UNIT | LP11 | 1 UNIT |
| | | AA11 | 1 UNIT |
| | | VSV01 | 1 UNIT |
| | | RK11-D | 1 DRIVE |

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150      .LIST SEQ,BIN
151      IODR 164000>164000 2700 7500 04266
152      MODULE 165000 NODD 165000 2700 7500 04266
153      ; TITLE NCAD DEC/X11 'SYSTEM' EXERCISER MODULE
154      ; DDXCOM VERSION 6 23-MAY-78
155      .LIST BIN
156
157      000000* 041516 042101 040
158      BCDNAM: ASCII /NCAD / ;MODULE NAME
159      XFLAC: BYTE OPEN           ;USED TO KEEP TRACK OF WBUFF USAGE
160      000056* 164000
161      000010* 000270
162      000012* 340
163      000013* 000
164      000014* 000001
165      000015* 000000
166      000016* 000000
167      000022* 000000
168      000024* 000000
169
170      000026* 152000
171      000030* 0004256*
172      000034* 000002
173      000035* 000002
174      000036* 000002
175      000040* 000000
176      000042* 000000
177      000044* 000000
178      000046* 000000
179      000049* 000000
180      000052* 000000
181      000054* 000000
182      000056* 000000
183      000056* 000000
184      000060* 000000
185      000062* 000000
186      000064* 000000
187      000066* 000000
188      000070* 000000
189      000072* 000000
190      000074* 000000
191      000076* 000000
192      000100* 000000
193      000101* 000000
194      000102* 000000
195      000104* 000000
196      000104* 000000
197      000106* 000000
198      000106* 000000
199      000110* 000000
200      000112* 000000
201      000112* 000000
202      000116* 000000
203      000120* 000000
204      000122* 000066
150      MDPNT: START           ;STATUS WORD.
151      MODSP: MODSP            ;MODULE START ADDR.
152      PASCNT: 0                ;MODULE START PTR.
153      PASCNT: 0                ;PASS COUNT.
154      ICNT: 2                 ;# OF ITERATIONS PER PASS=2
155      ICNT: 0                 ;LOC TO COUNT ITERATIONS
156      SOPCNT: 0               ;LOC TO SAVE TOTAL SOFT ERRORS
157      HRDCNT: 0               ;LOC TO SAVE TOTAL HARD ERRORS
158      SDPAS: 0                ;LOC TO SAVE SOFT ERRORS PER PASS
159      HDPAS: 0                ;LOC TO SAVE HARD ERRORS PER PASS
160      SYSCNT: 0               ;# OF SYS ERRORS ACCUMULATED
161      RANNUN: 0               ;HOLDS RANDOM # WHEN RAND MACRO IS CALLED
162      CONFIG: 0               ;RESERVED FOR MONITOR USE
163      RES1: 0                 ;RESERVED FOR MONITOR USE
164      RES2: 0                 ;RESERVED FOR MONITOR USE
165      SVR0: OPEN              ;LOC TO SAVE R0.
166      SVR1: OPEN              ;LOC TO SAVE R1.
167      SVR2: OPEN              ;LOC TO SAVE R2.
168      SVR3: OPEN              ;LOC TO SAVE R3.
169      SVR4: OPEN              ;LOC TO SAVE R4.
170      SVR5: OPEN              ;LOC TO SAVE R5.
171      SVR6: OPEN              ;LOC TO SAVE R6.
172      CSRA: OPEN              ;ADDR OF CURRENT CSR.
173      CSRB: OPEN              ;ADDR OF GOOD DATA, OR
174      W1SADP: OPEN             ;ADDR OF BAD DATA, OR
175      ASTAT: OPEN              ;STATUS REG CONTENTS.
176      ERRTYP: 0                ;TYPE OF ERROR.
177      ASR: OPEN               ;EXPECTED DATA.
178      AWAS: OPEN              ;ACTUAL DATA.
179      RSPT: RESTART            ;RESTART ADDRESS AFTER END OF PASS
180      WDP0: OPEN              ;WORDS TO MEMORY PER ITERATION
181      WDFR: OPEN              ;WORDS FROM MEMORY PER ITERATION
182      INTR: OPEN              ;# OF INTERRUPTS PER ITERATION
183      IDNUM: 66                ;MODULE IDENTIFICATION NUMBER=66

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205      000040
206      .REPT SPSIZ          ;MODULE STACK STARTS HERE.
207      .NLST
208      .WORD 0
209      .LIST
210      .ENDR
211      MODSP: 1

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212 001224* 000062      INTER: 50.          ;SUR-SECTION INTRATION EXECUTION COUNT
213                                         ;BUFFER ADDRESS...LOCAL TO PROGRAM
214                                         ;RRUFA: BUFFER
215                                         ;SPECIAL FUNCTIONS TO INTERFACE
216 001226* 001652*      CLHLD=1          ;CLEAR HOLD REGISTER
217                                         ;CLCOWF=2          ;CLEAR ALL OVERFLOW
218                                         ;COVT=4           ;CONVERT
219                                         ;CLDP=10          ;CLEAR JOY STICK DEPRESS
220                                         ;CLZOFW=20         ;CLEAR Z OVERFLOW FLOP
221                                         ;STM=40           ;SET TIMING MARK
222                                         ;CLALL=102        ;CLEAR ALL
223                                         ;INTERFACE REGISTERS
224 000230* 164000      CMDCSR: 164000    ;COMMAND REGISTER
225                                         ;OFFSET: 164002   ;OFFSET ADDRESS REGISTER
226                                         ;XYHOLD: 164004   ;WRITE - X/Y HOLD REGISTER
227                                         ;ADDRESS: 164006   ;READ - ADDRESS REGISTER
228                                         ;WORDCOUNT: 164008 ;WORD COUNT ADDRESS
229                                         ;CAZLO: 164010    ;BUS ADDRESS
230                                         ;MISCFU: 164012    ;SPECIAL FUNCTION ADDRESS
231                                         ;SFUNC: 164014    ;OVERFLOW INTERRUPT VECTOR
232 000232* 164002      OVFINT: 270       ;OVERFLOW INTERRUPT VECTOR
233                                         ;OVIINT: 274       ;Z OVERFLOW INTERRUPTS VECTOR
234                                         ;ZOVINT: 276       ;Z OVERFLOW INTERRUPTS VECTOR
235                                         ;INITIALIZATION OF GENERAL DEVICE ADDRESS AND VECTOR POINTERS
236 000246* 000270      START: MOV #152*, INTR    ;152 WORDS TO MEM/ITERATION
237 000247* 012767      MOV #2198*, WDT0    ;2198 WORDS FROM MEM/ITERATION
238 000248* 000272      XYHOLD: MOV #164004    ;CLEAR BASIC ADDRESS
239 000249* 012767      ADDRCR: MOV #164006    ;GET ADDRESS POINTER
240 000250* 016400       XYHOLD: MOV #164004    ;LOAD INTO BUS POINTER LOCATION
241 000251* 012767      TST (R0)+        ;TEST FOR SLAVE-SYNC
242 000252* 000270      CMP #OVFINT,R1    ;TEST IF FINISHED THE ADDRESSES
243 000253* 012767      BNE R0            ;IF NOT DONE?
244 000254* 000272      MOV VECTOP, R0    ;LOAD VECTOR ADDRESS
245 000255* 016700      TST (R0)+        ;LOAD VECTOR POINTER
246 000256* 000270      CMP #ZOVIT1+2,R1  ;TRUMP R0 BY?
247 000257* 012767      BNE 2S            ;TEST FOR LAST VECTOR
248 000258* 000270      BNE 2S            ;BR IF NOT DONE?
249 000259* 000270      BNE 2S            ;CLEAR NC11-A HARDWARE
250 000346* 012777      MOV #CLALL, QSFUNC  ;SAVE FOR TIMEOUTS
251 000346* 012767      MOV CMDCSR, CSRA    ;SAVE FOR TYPEOUTS

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263                                         ;NOW FIND A 2048 WORD BOUNDARY ADDRESS AND SAVE IT IN LOCATION "TARGET"
264 000354* 016700      BOUND: MOV RRUFA, R0    ;LOAD VIRTUAL BUFFER POINTER
265                                         ;BIT #R1T11, R0    ;TEST FOR BIT 11 OF
266 000360* 032700      BNE 2S            ;R1T11 IS ON BRANCH
267 000364* 001000      1S: TST (R0)+        ;ADJUST ADDRESS
268 000365* 001000      BEQ 1S            ;TEST BIT 11 AGAIN
269 000374* 012767      1S: TST (R11, R0)   ;BR IF NOT SET
270 000375* 000400      BR 3S            ;HAVE FOUND A BIT 11 BOUNDARY
271 000376* 000404      2S: TST (R0)+        ;ADJUST ADDRESS
272 000400* 005720      BEQ 2S            ;TEST BIT 11 AGAIN
273 000402* 032700      2S: TST (R11, R0)   ;BR IF SET
274 000406* 001000      BEQ 3S            ;SAVE A BIT 11 BOUNDARY
275 000410* 016700      3S: MOV R0, TARGET  ;SAVE A BIT 11 BOUNDARY
276 000410* 016700      MOV PC, TARGETI  ;MAKE A ODD-BYTE POINTER
277 000420* 005267      INC TARGETI
278                                         ;DETERMINE IF THE "INTERFACE MODE SWITCH" HAS BEEN SET
279                                         ;IF NOT REPORT ERROR AND DROP THE MODULE.
280
281 000424* 005077      OVINIT: CLR TARGET    ;CLEAR DESTINATION ADDRESS
282 000430* 016777      MOV TARGET, OFFSET  ;LOAD DESTINATION ADDRESS
283 000432* 012777      MOV #1401, ACMDCSR  ;ENABLE NC-11A FOR 32X32X16
284 000434* 001401      1S: TST #PIT11, R0    ;LOAD LOOP COUNTER
285 000444* 012700      BEQ 1S            ;TEST FOR NON-ZERO VALUE
286 000450* 005777      BNE R0            ;BR IF SET
287 000454* 001021      BNE R0            ;BNE PRT, RETURN TO MONITOR
288 000456* 012767      BBREAKS, BEGIN    ;BBREAKS, BEGIN
289 000457* 000400      DBC R0            ;THEN CONTINUE AT NEXT INSTRUCTION.
290 000465* 005300      BNE 1S            ;DELAY DONE?
291 000470* 001367      MOV #CLALL, QSFUNC  ;BR IF NOT DONE
292 000472* 012777      1S: TST (R0)+        ;CLEAR INTERFACE
293 000500* 012767      MOV #33, ERRTYPE  ;DEVICE NOT IN MAINT. MODE
294 000506* 104405      1S: ENDS, BEGIN    ;*****END*****NC-11A FAILED TO ADDRESS TARGET LOCATION*****
295                                         ;*****END*****NC-11A FAILED TO ADDRESS TARGET LOCATION*****
296                                         ;IS THE MAINTENANCE SWITCH IN THE "ON" POSITION ?????
297
298 ^00514* 104410      ENDS, BEGIN
299 000520* 012777      2S: MOV #CLALL, QSFUNC  ;CLEAR INTERFACE

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301      ;THIS IS THE PRIMING CODE.
302      ;THE INTERFACE IS INITIALLY SET UP TO INCREMENT WORD
303      ;TARGET UNTIL OVERFLOW AND THEN TO INTERRUPT.
304
305  000526* 012777 000652* 177512  PRIME: MOV    #OVSROUTINT ;SETUP INTERRUPT VECTOR
306      MOVR    #R11,OVSROUTINT ;LOAD BR LEVEL
307  000542* 016777 177252* 177506  MOV    ZOVINT,AZOVINT ;RESET Z OVERFLOW VECTOR
308  000550* 005377 177500           CLR    #ZOVINT
309  000554* 016777 177444 000666  MOV    INTER-PASSCT ;LOAD PASS COUNT LOC.
310  000576* 033767 001024 177454  MOVR    #RT1,SRI ;CLEAR ALL TEST BIT
311  000577* 033767 000001 177220  BNE    #RT1,SRI ;TEST IF SET TO NEXT SECTION
312  000578* 001071 001024 177454  RNE    #ODDPRM ;CLEAR TARGET LOC.
313  000600* 005377 001400 177416  WOPDRM: CLR    #TARGET
314  000604* 016777 001030 177412  MOVR    #RT1,ACMDCSR ;RESOLUTION SET TO 32X32X16
315  000612* 016777 000020           MOV    TARGET,AOFFSET ;BASE AT BUFFER TARGET LOC
316  000620* 017767 177410 000020  MOVR    #ADDREG,JUNK ;TWO DUMMY READS TO
317  000626* 054777 000104 177404  HIS    #1011,ACMDCSR ;ENABLE OVERFLOW INTERRUPT
318  000642* 104400 000000           MOVR    #ADDREG,JUNK ;CLEAR BUFFER CHAIN
319  000642* 104400 000000           MOVR    EXIT$,BEGIN ;CLEAR TO MONITOR. MODULE WAIT FOR INTERRUPT.
320
321  000646* 000000           JUNK: 0
322  000650* 000000           PASSCT: 0
323
324      ;OVERFLOW SERVICE ROUTINES
325      ;THIS ROUTINE SERVICES 20 INTERRUPTS OF WORD OVERFLOW MODE
326
327  000652* 012777 000102 177364  OVSR: MOV    #CLALL,ASFUNC ;CLEAR THE INTERFACE
328  000660* 000004 000000* 000666*  PIROS-BEGIN,1S ;QUEUE UP TO CONTINUE AT 1S AND RTI
329
330  000666* 017767 177336 177206  1S:  MOV    #CNDCSR,ACSPR ;READ STATUS
331  000676* 103910 012767 000003  RPL    25 ;ERRTYP
332  000676* 103910 012767 000003  MOV    #324,ERRTYP ;DATA LATE
333
334  000704* 104400 000000* 000000  SOFRS-BEGIN,NULL ;TIME OUT ERROR OR JOY STICK FLAG SET
335
336  000712* 104410 000000*           ENDS,BEGIN ;*
337
338  000716* 012767 177777 177162  2$:  MOV    #-1,ASB ;LOAD "SHOULD BE" VALUE
339  000724* 016767 000716 177162  MOVR    TARGET,WASADR ;LOAD "WAS ADDRESS" VALUE
340  000732* 017767 000710 177150  MOVR    TARGET,WAS   ;LOAD "WAS" VALUE
341  000740* 026767 177142 177142  CMP    ASB,WAS   ;TEST VALUE
342  000746* 001402             BEQ    3S ;YES - GO ON
343
344  000750* 104404 000000*           DATERS-BEGIN ;DATA ERROR!!!
345
346  000754* 005367 177670           3S:  DEC    PASSCT ;FINISHED ?
347  000760* 0013C7           BNE    WORDRK ;BR IF NOT DONE
348

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349      ;PRIME AND GO FOR TESTING ODD BYTE NPR'S
350      ;TEST LOCATION TARGET+1
351
352  000762* 016767 177236 177650  ODDPRM: MOV    INTER-PASSCT ;RESET PASS COUNT
353  000770* 012777 001062 177012  MOVR    #ODDINT,OVSROUTINT ;ADJUST INT VECTOR
354  000776* 033767 000002 177012  BIT    #RT1,SRI ;TEST INHIBIT THIS TEST BIT
355  001004* 001067           BNE    #RT1,SRI ;BR IF SET TO NEXT SECTION
356  001006* 005077 000634           ODBYOK: CLR    #TARGET ;CLEAR TARGET LOCATION
357  001012* 012777 003400 177208  MOVR    #3400,ACNDCSR ;32X32X8 MODE
358  001026* 016767 000514 177176  MOVR    #RT1,ACSPR ;LOAD OVF RYTE 1
359  001034* 017767 177174 177604  MOVR    TARGET,AOFFSET ;LOAD OFFSET REGISTER
360  001042* 025777 000101 177160  MOVR    #ADDREG,JUNK ;CLEAR OFF BUFFER
361  001050* 017767 177160 177590  HIS    #1011,ACMDCSR ;INTERRUPT ENABLE + GO!
362  001056* 104400 000000*           MOVR    #ADDREG,JUNK
363  001056* 104400 000000*           ENDS,BEGIN ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
364
365  001062* 012777 000102 177154  ODDINT: MOV    #CLALL,ASFUNC ;CLEAR INTERFACE
366  001070* 000004 000000* 001076*  PIROS-BEGIN,1S ;QUEUE UP TO CONTINUE AT 1S AND RTI
367
368  001076* 017767 177126 176776  1S:  MOV    #CNDCSR,ACSPR ;LOOK FOR NPR ERROR
369  001104* 100010             RPL    25 ;OK
370  001106* 012767 000032 176772  MOVR    #324,ERRTYP ;NPR ERROR
371
372  001114* 104405 000000* 000000  HPRRS-BEGIN,NULL ;NPR-TIME OUT ERROR OR JOYSTICK FLAG
373
374  001122* 104410 000000*           ENDS,BEGIN ;*
375
376  001126* 012767 177400 176752  2$:  MOV    #177400,ASB ;LOAD "SHOULD BE" VALUE
377  001134* 017767 000506 176746  MOVR    TARGET,WASADR ;LOAD "WAS ADDRESS" VALUE
378  001142* 026767 176740 176740  CMP    ASB,WAS   ;TEST TWO VALUES
379  001150* 001402             BEQ    3S ;*
380
381  001152* 104404 000000*           DATERS-BEGIN ;DATA ERROR!!!
382
383  001156* 005367 177466           3S:  DEC    PASSCT ;FINISHED ?
384  001162* 001311           PNF    ODBYOK ;BR IF NOT DONE
385
386
387

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388 ;PRIME + GO FOR TESTING EVEN BYTE NPR'S
389 ;TEST BYTE TARGET
390
391 0011627 016767 177034 177456 EVBYPM: MOV INTER,PASSCT ;RESET PASS COUNT
392 001266 032767 000004 176610 MOV #EVINT,SOVFINT ;ADJUST VECTOR
393 001266 032767 000004 176610 BIT #BIT2,SRI ;TEST INHIBIT THIS TEST BIT
394 001266 032767 000004 176610 RNE #RNE4 ;BR IF SET
395 001216 032517 000432 EVBYOK: CLR #TARGET ;CLEAR TARGET LOCATION
396 001214 016777 003400 177006 MOV #3400,ACMDCSR ;323218 NODE
397 001222 016777 000420 177002 MOV TARGET,OFFSET ;OFFSET AT 7K
398 001230 016777 177000 177410 MOV #ADDREG,JUNK
399 001236 052777 500101 176764 BITS #101,ACMDCSR ;ENABLE NC-11
400 001252 016767 000003 177374 MOV #ADDREG,JUNK
401 001252 104400 000000 EXITSBEGIN ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
402 001256 012777 000102 176760 EVINT: MOV #CLALL,ASFUNC ;CLEAR INTERFACE
403 001264 000004 000000 001272 PIROS,BEGIN,1S ;QUEUE UP TO CONTINUE AT 1S AND RTI
404
405 001277 017767 176732 176602 1S: MOV ACMDCSR,ACSR ;LOOK FOR NPI ERROR
406 001300 100700 000032 176576 RPL 25
407 001302 012767 000032 176576 MOVS #32,ERRTP ;NPI ERROR
408 001302 012767 000032 176576 ****
409 001310 104405 000000 000000 HRDERS,BEGIN,NULL ;NPI ERROR FLAG SET
410 001316 104410 000000 ENDS,BEGIN ;
411 001322 017767 000320 176550 2S: MOV #TARGET,AWAS ;LOAD "WAS" VALUE
412 001330 012767 000377 176550 MOV #37,ASWAS ;LOAD "SHOULD BE" VALUE
413 001336 026767 176544 176544 CMP ASWAS,AWAS ;COMPARE VALUE
414 001344 001402 BEQ 3S ;OK
415 001346 104404 000000 DATER,BEGIN ;DATA ERROR!!!
416 001352 005367 177272 3S: DEC PASSCT ;FINISHED ?
417 001356 001314 BNE EVBYPK ;BR IF NOT DONE

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425 ;PRIME FOR LIST MODE + GO
426 ;DO THE BUFFER OF 2048 WORDS AT THE CLOCK RATE THEN INTERRUPT.
427 LISTPM: MOV INTER,PASSCT
428 001360 016767 176640 177262 BIT #BITS,SRI ;TEST INHIBIT TEST BIT
429 001366 032767 000010 176422 RNE DONE ;BR IF SET
430 001374 016777 000004 176642 MOV OVFINT,SOVFINT ;LOAD WORD OVERFLOW VECTOR
431 001376 016777 176646 176642 CLR #OVFINT
432 001404 005077 176640 176642 MOV #ZOVSR,ZOVINT ;LOAD Z OVERFLOW VECTOR
433 001410 012777 001502 176634 MOVR #R1,ZOVINT ;LOAD BR LEVEL
434 001416 016777 008740 176230 MOV #CL1,ASFUNC ;CLEAR INTERFACE
435 001432 016777 000306 176574 CONTA: MOV XVMTRR,8XVHOLD ;INSERT FULL WORDS
436 001440 012777 000404 176562 MOV #404,ACMDCSR ;LIST MODE
437 001446 016777 174000 176562 MOV #-2048,8WCBSH ;WORD COUNT = -2048
438 001454 016777 176546 176556 MOVR RRUFAV,ACAZLO ;CURRENT ADDRESS - BUFFER
439 001462 016767 176546 177156 MOV #ADDREG,JUNK ;CLEAR BUFFERS
440 001470 016767 000000 176532 RIS #401,ACMDCSR ;ENABLE INTERRUPT AND GO
441 001502 012777 000102 176534 EXITSBEGIN ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
442 001502 012777 000000 176534 MOV #CLALL,ASFUNC ;CLEAR INTERFACE
443 001510 000004 000000 001516 PIROS,BEGIN,1S ;QUEUE UP TO CONTINUE AT 1S AND RTI
444
445 001516 017767 176506 176356 1S: MOV ACMDCSR,ACSR ;LOOK FOR NPI ERROR
446 001524 002767 000032 176352 RPL 25
447 001526 002767 000032 176352 MOVS #32,ERRTP ;NPI ERROR
448 001534 104405 000000 000000 ****
449 001542 104410 000000 HRDERS,BEGIN,NULL ;NPI ERROR FLAG SET
450 001542 104410 000000 ENDS,BEGIN ;
451 001542 104410 000000
452 001546 016767 006654 176330 2S: MOVR #8BUFFER,WASADR ;LOAD "WAS ADDRESS"
453 001546 016767 006654 176330 MOV XVMTRR,8XVHOLD ;LOAD "SHOULD BE" DATA
454 001562 017767 006654 176324 MOVS WASADR,AWAS ;GET DATA WORD
455 001562 017767 176316 176310 CMP AWAS,ASWAS ;CHECK FOR PROPER DATA
456 001562 017767 176314 176310 BEQ 4S ;BR IF CORRECT
457 001576 001402
458 001600 104404 000000 DATER,BEGIN ;DATA ERROR!!!
459 001604 062767 000002 176272 ADD #2,WASADR ;GO TO NEXT LOCATION
460 001612 024727 176285 002052 CMP WASADR,#8BUFFER+200 ;BUT NOT TOO FAR
461 001612 024727 176285 002052 RNE 3S
462 001630 001360 000000 COM XVMTRR ;CHANGE DATA PATTERN
463 001630 001360 000000 DEC PASSCT
464 001632 005167 000016 RNE CONTA ;PRIME WORD NPR AGAIN
465 001632 005167 177016
466 001632 001277 DONE: ENDITS,BEGIN ;SIGNAL END OF ITERATION.
467 001634 104413 000000 ;MONITOR SHALL TEST END OF PASS
468 001640 000167 176434 JMP RFSTART
469 001644 052525 XYMIREF: ;MIRROR OF X-Y HOLD
470 001644 052525 TARGET: BUFFER ;2048 WORD BOUNDARY POINTER INTO BUFFER AREA
471 001646 001652 TARGET: BUFFER+1 ;2048 ODD-BYTE BOUNDARY POINTER INTO BUFFER
472 001646 001652 BUFFER: 0
473 001650 001653 BUFFER: 0
474 001652 000000 RLKW 2048.
475 001654 004000 LAST: 0
476 001654 004000 .END
477 000001

```

XCAD DEC/X11 SYSTEM EXERCISER MODULE
XNCADO.P11 12-OCT-78 12:03

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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0012

XNCAD DEC/X11 SYSTEM EXERCISER MODULE
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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0013

NCAD DEC/X11 SYSTEM EXERCISER MODULE
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CROSS REFERENCE TABLE -- USER SYMBOLS

SEQ 0014

• ABS. 000000 000
011656 001

ERRORS DETECTED: 0
DEFAULT GLOBALS GENERATED: 0

DEFINITION GLOBALS GENERATED: 0
XNCADO_XNCADO/SOL /CRF:SYM=DDXCOM,XNCADO
RUN-TIME: 1 1 3 SECONDS
RUN-TIME RATIO: 21/3=6.0
CORE USED: 7K (13 PAGES)