

.REM

IDENTIFICATION

PRODUCT CODE: AC-E998C-MC
PRODUCT NAME: CXDLBC0 DL11-E,DLV11-E MODULE
PRODUCT DATE: JULY 1985
MAINTAINER: DEC/X11 SUPPORT GROUP

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DEC/X11 SYSTEM EXERSIZER MACRO DEFINITION MODULE

1.0 ABSTRACT

CXDLB IS AN IOMOD THAT EXERCISES ONE DL11-E (OR DLV11-E) ASYNCHRONOUS COMMUNICATIONS INTERFACE (M7800). THE PROGRAM CONSISTS OF TWO MAJOR SECTIONS AS DESCRIBED BELOW:

SECTION ONE:

THE FIRST SECTION CONSISTS OF A LOGICALLY SEQUENCED SET OF STATIC REGISTER TESTS TO VERIFY THE DL11-E HARDWARE REQUIRED TO PERFORM INPUT/OUTPUT DATA TRANSFERS IN INTERRUPT MODE. ERRORS DETECTED IN THIS SECTION THAT ARE DETERMINED TO BE FATAL ARE REPORTED VIA THE STANDARD DEC/X11 ERROR PRINTOUT AND THEN THE MODULE IS DROPPED FROM THE EXERCISE. NON-FATAL ERRORS ARE SIMPLY REPORTED AND THEN THE PROGRAM CONTINUES IN NORMAL SEQUENCE.

SECTION TWO:

THE SECOND SECTION TRANSFERS 256. BYTE BLOCKS OF DATA USING THE MAINTENANCE MODE TO TURN THE DATA AROUND. THE 256. BYTES OUTPUT ARE COMPARED WITH THE 256. BYTES INPUT FOR DATA COMPARISON ERRORS. ALL DATA COMPARISON ERRORS ARE REPORTED ON THE CONSOLE DEVICE. THE 256. BYTE TRANSFER IS REPEATED FOR FOUR DIFFERENT DATA BIT PATTERNS AS DESCRIBED BELOW:

A. NULL-DEL NULL SEQUENCE	(000,377,000.....,000,377)
B. BINARY UP-COUNT SEQUENCE	(000,001,002.....,376,377)
C. BINARY DOWN COUNT SEQUENCE	(377,376,375.....,001,000)
D. WORST CASE PATTERN	(376,377,001,000.,000,200)

2.0 REQUIREMENTS

HARDWARE: A UNIBUS PDP 11 COMPUTER WITH A DL11-E INTERFACE
OR A Q-BUS PDP-11 COMPUTER WITH A DLV11-E INTERFACE

STORAGE: DLB REQUIRES:

1. DECIMAL WORDS: 1356
2. OCTAL WORDS: 2514
3. OCTAL BYTES: 5230

3.0 PASS DEFINITION

ONE PASS OF CXDLB CONSISTS OF TWO ITERATIONS OF SECTION TWO OF THE MODULE CODE WHICH RESULTS IN 2048(10) BYTES TRANSFERRED.

4.0 EXECUTION TIME

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AT 300 BAUD RUNNING ALONE ON A PDP11/40 A SINGLE ERROR FREE PASS TAKES APPROXIMATELY 40. SECONDS THIS TIME WILL VARY DEPENDING UPON THE BAUD RATE AND CPU TYPE.

5.0 CONFIGURATION PARAMETERS

DEFAULT PARAMETERS:

DVA: 175610 VCT: 300 BR1: 4 BR2: 0
DVC: 1 SR1: 0 SR2: 0

REQUIRED PARAMETERS:

SR1: TO EXERCISE THOSE STATIC TESTS REQUIRING THE USE OF THE H315 MODEM TEST CONNECTOR (MODEM CONTROL LOGIC) BIT 15 OF SR1 MUST BE SET TO A "1". IE SR1=100000.
** NOTE: IF SR1 BIT 15=1 AND THE MODEM TEST CONNECTOR IS NOT INSTALLED, FALSE ERRORS WILL BE REPORTED.

SR2: THIS LOCATION CAN BE LOADED WITH A VALUE TO SET THE BAUD RATE FOR A DLV11E THAT IS WIRED FOR A PROGRAMMABLE BAUD RATE THESE VALUES ARE SHOWN IN THE PERIPHERAL HANDBOOK. SOME EXAMPLES ARE:

00000 = 9600 BAUD	004000 = 0050 BAUD
02400 = 0110 BAUD	044000 = 0300 BAUD
07400 = 1200 BAUD	124000 = 2400 BAUD
14400 = 4800 BAUD	174000 = 19200 BAUD
16400 = ALSO GIVES 9600 BAUD	

6.0 DEVICE/OPTION SETUP

IF THE MODEM CONTROL LOGIC IS TO BE TESTED, THE USER MUST DISCONNECT THE MODEM AND CONNECT THE H315 TEST CONNECTOR TO THE DL11-E DEVICE CABLE. SR1 MUST BE SETUP AS DESCRIBED IN (5.0) OR THE TESTS WILL BE SKIPPED.

7.0 MODULE OPERATION

7.1 TEST SEQUENCES

A. STATIC REGISTER TESTS

DLT01: TEST THAT ALL BITS IN THE RCSR ARE CLEAR WHEN THE MODULE IS INITIALIZED TO RUN.

DLT02: TEST THAT ONLY THE "READY" BIT IS SET IN THE XCSR WHEN THE MODULE IS INITIALIZED TO RUN.

DLT03: TEST THAT THE "MAINT" BIT IN THE XCSR CAN BE SET AND CLEARED.

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- DLT04: TEST THAT THE "INTR ENAB" BIT IN THE XCSR CAN CAUSE AN INTERRUPT TO THE PROPER VECTOR WHEN SET AND ALSO THAT "INTR ENAB" CLEARS PROPERLY.
- DLT05: TEST THAT A RECEIVER INTERRUPT OCCURS TO THE PROPER VECTOR WHEN "DONE" GETS SET WITH THE "INTR ENAB" BIT IN THE RCSR SET TO A ONE. ALSO TEST THAT THE CORRECT DATA IS RECEIVED.
- TESTS DLT06 THRU DLT13 ASSUME THAT THE H315 MODEM TEST CONNECTOR IS INSTALLED. THE USER INDICATES THIS BY SETTING BIT15 IN SR1. THE MODULE LOOKS AT SR1 AND WILL SKIP AROUND DLT06 THRU DLT13 IF BIT15=0.
- DLT06: TEST THAT "REQ TO SEND" CAN ASSERT "RING" WHEN SET AND THAT BOTH "REQ TO SEND" AND "RING" CAN BE CLEARED PROPERLY.
- DLT07: TEST THAT "SEC XMIT" WHEN SET ASSERTS "SEC REC" WHICH SETS "DATA SET INT" AND THAT READING THE RXSR CLEARS "DATA SET INT". ALSO TESTS THAT CLEARING "SEC XMIT" NEGATES "SEC REC" WHICH ALSO CAUSES "DATA SET INT" TO SET.
- DLT10: TEST THAT "DTR" ASSERTS "CLR TO SEND" AND "CAR DET" WHICH IN TURN SET "DATA SET INT". ALSO TESTS THAT "CLR TO SEND" AND "CAR DET" CLEAR WHEN "DTR" IS CLEARED.
- DLT11: TEST THAT "DATA SET INTR ENABLE" CAN BE SET AND CLEARED.
- DLT12: TEST THAT "DATA SET INTR ENABLE" IN THE XCSR CAUSES AN INTR. WHEN ENABLED.
- DLT13: TEST THAT THE BREAK BIT IN THE XCSR CAN BE SET AND CLEARED.

NOTE: BASIC TESTS DLT01 THRU DLT13 ARE EXECUTED ONLY ONCE WHEN THE MODULE IS FIRST INITIALIZED. IF ANY FATAL ERRORS ARE DETECTED THE MODULE IS DROPPED PRIOR TO THE DATA TRANSFER TESTS. AFTER PASS 1 THE MODULE IS RESTARTED AT THE ENTRY POINT TO THE DATA TRANSFER TESTS.

B. DATA TRANSFER TESTS

AFTER THE BASIC TESTS ARE RUN, FOUR 256(10) BYTE DATA TRANSFERS ARE EXECUTED IN THE MAINTENANCE MODE. EACH 256(10) BYTE BLOCK TRANSFER IS DIFFERENT IN THAT FOUR DIFFERENT DATA PATTERNS ARE XMITTED AND RECEIVED AS DESCRIBED IN PARA. 1.0.

THE TEST SEQUENCE FOR THE DATA TRANSFER TESTS IS AS FOLLOWS:

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- 1.) CLEAR BOTH THE INPUT AND OUTPUT BUFFERS IN CORE (256(10) BYTES EACH).
- 2.) LOAD THE OUTPUT BUFFER WITH THE APPROPRIATE DATA PATTERN.
- 3.) ENABLE BOTH THE XMIT AND RCVH INTERRUPTS AND INITIATE THE DATA TRANSFERS.
- 4.) AFTER 256(10) BYTES HAVE BEEN OUTPUT AND INPUT COMPARE THE OUTPUT AND INPUT BUFFERS, BYTE BY BYTE FOR DATA COMPARE ERRORS. REPORT ALL DATA ERRORS ON THE CONSOLE DEVICE.
- 5.) IF ALL FOUR DATA PATTERNS HAVE BEEN TRANSFERRED, GO TO (6) BELOW - IF NOT REPEAT (1) THRU (4) FOR THE NEXT PATTERN.
- 6.) DECREMENT A PASS COUNTER (INITIALIZED TO 2.) AND TEST FOR ZERO. IF ZERO GO TO (7) - IF NOT REPEAT (1) THRU (5) AGAIN.
- 7.) REPORT END OF PASS TO THE MONITOR AND RESTART AT (1) WITH THE FIRST DATA PATTERN.

NOTES:

- (1) ON EACH "XMIT" INTERRUPT THE "READY" FLAG IS TESTED AND IF NOT SET, THE ERROR IS REPORTED AND THE MODULE IS DROPPED. (FALSE INTERRUPTS ARE CLASSIFIED AS FATAL ERRORS).
- (2) ON EACH "RCVR" INTERRUPT THE "DONE" FLAG IS TESTED AND IF NOT SET THE MODULE IS DROPPED THE SAME AS FOR A "XMIT FALSE INTERRUPT".
- (3) IF A SOFT ERROR (PARITY-FRAMING-OVERRUN) IS DETECTED IN RCVR INTR. SERVICE, THE OFFENDING BLOCK TRANSFER IS RESTARTED FROM THE BEGINNING OF THE BLOCK. IF AFTER THREE RETRIES THE ERROR PERSISTS, TRANSFER OF THE OFFENDING DATA PATTERN IS ABORTED AND THE PROGRAM GOES ON TO THE NEXT DATA PATTERN. ALL SOFT ERRORS ARE REPORTED ON THE CONSOLE DEVICE.

7.2 SUBROUTINE ABSTRACTS

SEGX: THIS SUBROUTINE SERVES AS A MINI-MONOTOR THAT CONTROLS THE SEQUENCING OF THE FOUR DIFFERENT 256(10) BYTE BLOCK TRANSFERS. IT IS CALLED AFTER THE BASIC TESTS AND PERFORMS THE FOLLOWING FUNCTIONS:

1. CALLS A SUBROUTINE TO CLEAR THE DATA BUFFERS
2. CALLS THE APPROPRIATE SUBROUTINE TO SET UP THE

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- OUTPUT BUFFER WITH THE REQUIRED DATA PATTERN.
3. CALLS A SUBROUTINE TO ENABLE INTERRUPTS AND INITIATE THE DATA TRANSFER.
 4. SERVICES RETRIES REQUESTED BY SOFT ERRORS.
 5. PERFORMS "BREAK" CALLS TO THE MONITOR TO PREVENT TIMEOUTS FROM HANGING THE MODULE.
 6. CALLS THE SUBROUTINE TO CHECK THE DATA BUFFERS WHEN THE BLOCK TRANSFER IS COMPLETE.

KICKOF: THIS SUBROUTINE IS CALLED FROM "SEGX" AND CONTAINS THE CODE TO ENABLE INTERRUPTS AND INITIATE THE BLOCK TRANSFER FOR EACH 256(10) BYTE BLOCK TRANSFER.

CHKDAT: THIS SUBROUTINE IS CALLED FROM "SEGX" AND CHECKS FOR DATA COMPARISON ERRORS AFTER EACH BLOCK TRANSFER.

STATR: THIS SUBROUTINE IS CALLED FROM THE BASIC TESTS AND SETS UP THE ERROR INFORMATION FOR ALL ERRORS RELATING TO THE RECEIVER CSR.

STATX: THIS ROUTINE IS CALLED FROM THE BASIC TESTS AND SETS UP THE ERROR INFORMATION FOR ALL ERRORS RELATING TO THE TRANSMITTER CSR.

CLDLBF: THIS ROUTINE IS CALLED FROM "SEGX" AND CLEARS BOTH THE OUTPUT AND INPUT DATA BUFFERS IN CORE.

LDOUT1: THIS ROUTINE IS CALLED FROM "SEGX" AND IS USED TO LOAD THE OUTPUT BUFFER WITH THE NULL-DEL-NULL PATTERN.

LDOUT2: THIS ROUTINE IS CALLED FROM "SEGX" AND IS USED TO LOAD THE OUTPUT BUFFER WITH A BINARY UP-COUNT PATTERN.

LDOUT3: THIS ROUTINE IS CALLED FROM "SEGX" AND IS USED TO LOAD THE OUTPUT BUFFER WITH A BINARY DOWN-COUNT PATTERN.

LDOUT4: THIS ROUTINE IS CALLED FROM "SEGX" AND IS USED TO LOAD THE OUTPUT BUFFER WITH THE MONITOR'S WORST CASE PATTERN.

8.0 OPERATOR OPTIONS

- A. USE THE MOD COMMAND TO MODIFY LOCATION "DLB 16" TO CHANGE SR1. REFER TO PARA. 5.0.
- B. MODIFYING THE CONTENTS OF MODULE LOCATION "RESTR +2" ALLOWS THE USER TO VARY THE TOTAL NO. OF BYTES TRANSFERRED PER PASS. THIS IS DEFAULTED AT LOAD TIME TO 2 WHICH RESULTS IN 2048. BYTES TRANSFERRED.

9.0 NON-STANDARD ERROR PRINTOUTS

- A. IF ANY ONE OF THE FOUR DATA PATTERNS OUTPUT CANNOT BE SUCCESSFULLY COMPLETED DUE TO SOFT ERRORS (3 RETRIES ATTEMPTED)

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:DL11-E DEC/X11 EXERCISER MODULE

```

000000      IOMOD   <DLBC >,175610,300,4,,,2,,161
000000      MODULE 140000,DLBC ,175610,300,4,,,2,,161,,,,
              .TITLE DLBC DEC/X11 SYSTEM EXERCISER MODULE
              :      DDXCOM  VERSION 6.4   28 JAN-82
                          .LIST  BIN
;*****
000000      BEGIN:
000000      104      114      102  MODNAM: .ASCII /DLBC / ;MODULE NAME.
000003      103      040
000005      000
000006      175610
000010      000300
000012      200
000013      000
000014      000001
000016      000000
000020      000000
000022      000000
000024      000000
;*****
000026      140000      STAT: 140000 ;STATUS WORD.
000030      000226'    INIT: START ;MODULE START ADDR.
000032      000224'    SPOINT: MODSP ;MODULE STACK POINTER.
000034      000000      PASCNT: 0 ;PASS COUNTER.
000036      000002      ICNT: 2. ;# OF ITERATIONS PER PASS=2.
000040      000000      ICONT: 0 ;LOC TO COUNT ITERATIONS
000042      000000      SOFCNT: 0 ;LOC TO SAVE TOTAL SOFT ERRORS
000044      000000      HRDCNT: 0 ;LOC TO SAVE TOTAL HARD ERRORS
000046      000000      SOFPAS: 0 ;LOC TO SAVE SOFT ERRORS PER PASS
000050      000000      HRDPAS: 0 ;LOC TO SAVE HARD ERRORS PER PASS
000052      000000      SYSCNT: 0 ;# OF SYS ERRORS ACCUMULATED
000054      000000      RANNUM: 0 ;HOLDS RANDOM # WHEN RAND MACRO IS CALLED
000056      000000      CONFIG: ;RESERVED FOR MONITOR USE
000056      000000      RES1: 0 ;RESERVED FOR MONITOR USE
000060      000000      PES2: 0 ;RESERVED FOR MONITOR USE
000062      000000      SVR0: OPEN ;LOC TO SAVE R0.
000064      000000      SVR1: OPEN ;LOC TO SAVE R1.
000066      000000      SVR2: OPEN ;LOC TO SAVE R2.
000070      000000      SVR3: OPEN ;LOC TO SAVE R3.
000072      000000      SVR4: OPEN ;LOC TO SAVE R4.
000074      000000      SVR5: OPEN ;LOC TO SAVE R5.
000076      000000      SVR6: OPEN ;LOC TO SAVE R6.
000100      000000      CSRA: OPEN ;ADDR OF CURRENT CSR.
000102      SBADR: ;ADDR OF GOOD DATA, OR
000102      000000      ACSR: OPEN ;CONTENTS OF CSR.
000104      WASADR: ;ADDR OF BAD DATA, OR
000104      000000      ASTAT: OPEN ;STATUS REG CONTENTS.
000106      ERRTP: ;TYPE OF ERROR
000106      000000      ASB: OPEN ;EXPECTED DATA.
000110      000000      AWAS: OPEN ;ACTUAL DATA.
000112      002406'    RSTRT: RSTRT ;RESTART ADDRESS AFTER END OF PASS
000114      000000      WDTO: OPEN ;WORDS TO MEMORY PER ITERATION
000116      000000      WDFR: OPEN ;WORDS FROM MEMORY PER ITERATION
000120      000000      INTR: OPEN ;# OF INTERRUPTS PER ITERATION
000122      000161      IDNUM: 161 ;MODULE IDENTIFICATION NUMBER=161

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DEC/X11 SYSTEM EXERSIZER MACRO DEFINITION MODULE

000040

```
.REPT   SPSIZ           ;MODULE STACK STARTS HERE.
.NLIST
.WORD   0
.LIST
.ENDR
```

000224

MODSP:

;*****

368

369

370

371

372

373

374

375

376

377 000224 000020

378

379

;*

```
; THE NEXT LOCATION CONTAINS A NUMBER THAT CAN BE EXAMINED IN CORE TO BE
; SURE THAT THE LISTING AND ACTUAL CODE ARE THE SAME. THIS LOCATION IS
; TO BE UPDATED EACH TIME THE SOURCE CODE IS UPDATED. LOCATION 'MODREV'
; IS NOT USED BY THE PROGRAM.
```

;-

MODREV: 1+1+1+1+1+1+1+1+1+1+1+1+1+1+1

;*****

DEC/X11 SYSTEM EXERCISER MACRO DEFINITION MODULE

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381
382 000226 016700 177554      START:  MOV      ADDR,R0          ;SET BASE DEVICE ADDRESS
383 000232 010067 003402      MOV      R0,DLRCSR          ;SET UP RCVR CSR ADDRESS
384 000236 005720              TST      (R0)+              ;
385 000240 010067 003376      MOV      R0,DLRDBR         ;SET UP RCVR DBR ADDRESS
386 000244 005720              TST      (R0)+              ;
387 000246 010067 003372      MOV      R0,DLXCSR         ;SET UP XMITTR CSR ADDRESS
388 000252 005720              TST      (R0)+              ;
389 000254 010067 003366      MOV      R0,DLXDBR         ;SET UP XMITTR DBR ADDRESS
390
391
392      ;                      *****
393      ;                      * SECTION ONE *
394      ;                      *****
395
396 000260 005077 003354      DLIMIT: CLR      @DLRCSR          ;CLEAR OUT BOTH CSR'S
397 000264 005077 003350      CLR      @DLRCSR          ;MAKE SURE ALL DATA COMM BITS CLEARED
398 000270 005077 003350      CLR      @DLXCSR          ;
399 000274 005777 003342      TST      @DLRDBR          ;FLUSH RCVR DONE BIT
400 000300 005777 003336      TST      @DLRDBR          ;
401
402
403      ;IN CASE IT'S PROGRAMMABLE, LOAD DLXCSR WITH DESIRED BAUD RATE FROM SR2.
404      ;IF SR2 IS ZERO THEN LOAD BAUD RATE OF 9600
405      ;-----
406
407 000304 012700 164000      MOV      #164000,R0         ;SETUP BAUD RATE                      ;RG01
408 000310 032767 004000 177502 BIT      #BIT11,SR2         ;BAUD RATE LOADED?                      ;RG01
409 000316 001404              BEQ      1$                 ;BRANCH IF NOT                          ;RG01
410 000320 016700 177474      MOV      SR2,R0            ;GET RATE                                ;RG01
411 000324 042700 003777      BIC      #3777,R0          ;CLR UNWANTED BITS                      ;RG01
412 000330 010077 003310 1$:  MOV      R0,@DLXCSR         ;LOAD IT                                ;RG01
413
414
415      ;THIS TEST VERIFIES THAT RCVR CSR GOT CLEARED UPON ENTRY
416      ;-----
417
418 000334 005777 003300      DLT01: TST      @DLRCSR          ;IS RCVR CSR ALL ZEROES ??
419 000340 001415              BEQ      DLT02              ;BR IF YES
420 000342 004767 003072      JSR      PC,STATR          ;GO SET UP ERROR INFO
421 000346 012767 000025 177532 MOV      #25,ERRTYP         ;
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DEC/X11 SYSTEM EXERCISER MACRO DEFINITION MODULE

```

434 000424 104403 000000' 003712'      MSGN$,BEGIN,DRPMS      ;ASCII MESSAGE CALL WITH COMMON HEADER
435 000432 104410 000000'                END$,BEGIN            ;
436
437                                     ;TEST THAT MAINT. BIT CAN BE SET AND CLEARED IN XMIT CSR
438                                     ;-----
439
440 000436 052777 000004 003200 DLT03: BIS      #4,@DLXCSR      ;SET THE MAINT. BIT
441 000444 022777 000204 003172      CMP      #204,@DLXCSR   ;DID IT SET ??
442 000452 001415                BEQ      1$             ;BR IF YES
443 000454 004767 002776                JSR      PC,STATX      ;GO SET UP ERROR INFO
444 000460 012767 000033 177420      MOV      #33,ERRTYP
445                                     ;*****
000466 104405 000000' 000000      HRDR$,BEGIN,NULL      ;MAINT BIT WON'T SET OR IT CLEARED READY
446 000474 104403 000000' 003712'      MSGN$,BEGIN,DRPMS     ;ASCII MESSAGE CALL WITH COMMON HEADER
447 000502 104410 000000'                END$,BEGIN            ;
448 000506 042777 000004 003130 1$: BIC      #4,@DLXCSR      ;NOW CLR THE MAINT BIT
449 000514 022777 000200 003122      CMP      #200,@DLXCSR   ;DID IT CLEAR ??
450 000522 001415                BEQ      DLT04         ;BR IF YES
451 000524 004767 002726                JSR      PC,STATX      ;GO SET UP ERROR INFO
452 000530 012767 000025 177350      MOV      #25,ERRTYP
453                                     ;*****
000536 104405 000000' 000000      HRDR$,BEGIN,NULL      ;MAINT. BIT WON'T CLEAR OR READY CLEARED
454 000544 104403 000000' 003712'      MSGN$,BEGIN,DRPMS     ;ASCII MESSAGE CALL WITH COMMON HEADER
455 000552 104410 000000'                END$,BEGIN            ;
456
457                                     ;TEST THAT BIT 06 IN XCSR CAN CAUSE AN INTERRUPT
458                                     ;-----
459
460 000556 005067 003100                DLT04: CLR      INTFLG      ;INIT THE SOFTWARE INTR. FLAG
461 000562 016700 177222                MOV      VECTOR,RO     ;GET BASE VECTOR ADDRESS
462 000566 062700 000004                ADD      #4,RO         ;GENERATE ADDR OF XMIT VECTOR
463 000572 012720 000666'                MOV      #2$, (RO)+    ;GO TO 2$ ON XMIT INTERRUPT
464 000576 116710 177210                MOV      BR1,(RO)      ;PRIORITY LEVEL = BR1
465 000602 005001                CLR      R1            ;INIT BREAK TIMER
466 000604 052777 000100 003032        BIS      #100,@DLXCSR  ;SET INTR. ENAB
467 000612 000612 104407 000000' 000612 1$: BREAK$,BEGIN      ;TEMPORARY RETURN TO MONITOR....
000616 104407 000000'                BREAK$,BEGIN          ;THEN CONTINUE AT NEXT INSTRUCTION.
468 000622 005767 003034                TST      INTFLG        ;DID XMIT INTR OCCUR ??
469 000626 001025                BNE      3$           ;BR IF IT DID
470 000630 005301                DEC      R1            ;COUNT BREAK TIMER
471 000632 001367                BNE      1$           ;BR IF NO TIMEOUT
472 000634 004767 002616                JSR      PC,STATX      ;GO SET UP ERROR INFO
473 000640 012767 000023 177240      MOV      #23,ERRTYP
474                                     ;*****
000646 104405 000000' 000000      HRDR$,BEGIN,NULL      ;XMITTER FAILED TO GENERATE INTERRUPT
475 000654 104403 000000' 003712'      MSGN$,BEGIN,DRPMS     ;ASCII MESSAGE CALL WITH COMMON HEADER
476 000662 104410 000000'                END$,BEGIN            ;
477 000666 042777 000100 002750 2$: BIC      #100,@DLXCSR  ;DISABLE XMITTR INTR ENABLE
478 000674 005167 002762                COM      INTFLG        ;SET THE INTR. FLAG
479 000700 000002                RTI                    ;RETURN CONTROL TO OTHER GUY
480 000702 022777 000200 002734 3$: CMP      #200,@DLXCSR  ;DID I.E. GET CLEARED IN INTR. SERVICE
481 000710 001415                BEQ      DLT05         ;BR IF YES
482 000712 004767 002540                JSR      PC,STATX      ;GO SET UP ERROR INFO

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DEC/X11 SYS . I EXERSIZER MACRO DEFINITION MODULE

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483 000716 012767 000027 177162      MOV     #27,ERRTYP
484                                     ;*****
      000724 104405 000000' 000000  HRDR$,BEGIN,NULL      ;"D" OR RCVR INTR. ENAB FAILED TO CLEAR
                                     ;*****
485 000732 104403 000000' 003712'    MSGN$,BEGIN,DRPMS     ;ASC. I MESSAGE CALL WITH COMMON HEADER
486 000740 104410 000000'          END$,BEGIN             ;
487
488                                     ;TEST THAT A RCVR INTR CAN OCCUR WHEN "DONE" GETS SET
489                                     ;-----
490
491 000744 005067 002712      DLT05: CLR     INTFLG          ;INIT SOFTWARE INTR. FLAG
492 000750 016700 177034      MOV     VECTOR,RO     ;GET THE BASE VECTOR ADDRESS
493 000754 012720 001214'    MOV     #4,(RO)       ;GO TO 4$ ON RCVR INTERRUPT
494 000760 116710 177026      MOVB   BR1,(RO)       ;SET PRIORITY
495 000764 052777 000100 002646    BIS    #100,@DLRCSR   ;SET I.E. IN RCVR CSR
496 000772 032777 000100 002640    BIT    #100,@DLRCSR   ;DID IT SET
497 001000 001015          BNE    1$             ;BR IF IT DID
498 001002 004767 002432      JSR    PC,STATR       ;GO SET UP ERROR INFO
499 001006 012767 000033 177072      MOV     #33,ERRTYP
500                                     ;*****
      001014 104405 000000' 000000  HRDR$,BEGIN,NULL      ;CAN'T SET BIT 06 IN RCSR I.E.
                                     ;*****
501 001022 104403 000000' 003712'    MSGN$,BEGIN,DRPMS     ;ASCII MESSAGE CALL WITH COMMON HEADER
502 001030 104410 000000'          END$,BEGIN             ;
503 001034 042777 000100 002576 1$:  BIC    #100,@DLRCSR   ;NOW CLEAR THE I.E. BIT
504 001042 032777 000100 002570      BIT    #100,@DLRCSR   ;DID I.E. BIT GET CLEARED ??
505 001050 001415          BEQ    2$             ;BR IF YES
506 001052 004767 002362      JSR    PC,STATR       ;GO SET UP ERROR INFO
507 001056 012767 000023 177022      MOV     #23,ERRTYP
508                                     ;*****
      001064 104405 000000' 000000  HRDR$,BEGIN,NULL      ;CAN'T CLEAR RCSR INTR. ENAB. BIT
                                     ;*****
509 001072 104403 000000' 003712'    MSGN$,BEGIN,DRPMS     ;ASCII MESSAGE CALL WITH COMMON HEADER
510 001100 104410 000000'          END$,BEGIN             ;
511 001104 052777 000100 002526 2$:  BIS    #100,@DLRCSR   ;NOW TURN IT ON FOR REAL
512 001112 052777 000004 002524      BIS    #4,@DLXCSR     ;TURN ON MAINT. MODE
513 001120 005001          CLR    R1             ;INIT BREAK TIMER
514 001122 112777 000252 002516      MOVB   #252,@DLXDBR   ;LOAD THE XMITTR OUTPUT DATA BUFFER
515 001130          3$:
      001130 104407 000000'      BREAK$,BEGIN          ;TEMPORARY RETURN TO MONITOR...
      001134 104407 000000'      BREAK$,BEGIN          ;THEN CONTINUE AT NEXT INSTRUCTION.
516 001140 005767 002516      TST    INTFLG         ;DID RCVR INTR. YET ??
517 001144 001036          BNE    5$             ;BR IF IT DID
518 001146 005301          DEC    R1             ;COUNT BREAK TIMER
519 001150 001367          BNE    3$             ;BR IF NO TIMEOUT
520 001152 004767 002262      JSR    PC,STATR       ;GO SET UP ERROR INFO
521 001156 005077 002456      CLR    @DLRCSR        ;CLEAR BOTH CSR'S
522 001162 005077 002456      CLR    @DLXCSR
523 001166 012767 000023 176712      MOV     #23,ERRTYP
524                                     ;*****
      001174 104405 000000' 000000  HRDR$,BEGIN,NULL      ;RCVR FAILED TO INTR ON TIME
                                     ;*****
525 001202 104403 000000' 003712'    MSGN$,BEGIN,DRPMS     ;ASCII MESSAGE CALL WITH COMMON HEADER
526 001210 104410 000000'          END$,BEGIN             ;
527 001214 117767 002422 176666 4$:  MOVB   @DLRDBR,AWAS   ;GET THE RECEIVED DATA
528 001222 042777 000100 002410      BIC    #100,@DLRCSR   ;TURN OFF I.E.
529 001230 005077 002410      CLR    @DLXCSR        ;TURN OFF MAINTENANCE MODE

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DEC/X11 SYSTEM EXERSIZER MACRO DEFINITION MODULE

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530 001234 005167 002422          COM      INTFLG          ;SET SOFTWARE INTR. FLAG
531 001240 000002                   RTI              ;RETURN TO OTHER GUY
532 001242 005777 002372          5:      IS?      @DLRCSR      ;DID INTR SERVICE CLEAR THE RCVR CSR ??
533 001246 001421                   BEQ              ;BR IF IT DID
534 001250 004767 002164          JSR      PC,STATR      ;GO SET UP ERROR INFO
535 001254 005077 002360          CLR      @DLRCSR      ;CLEAR BOTH CSR'S
536 001260 005077 002360          CLR      @DLXCSR
537 001264 012767 000025 176614   MOV      #25,ERRTYF
538                                ;*****
                                HRDR#,BEGIN,NULL      ;RCVR INTR SERVICE FAILED TO CLEAR I.E. AND DONE
                                ;*****
539 001300 104403 000000' 003712' MSGN#,BEGIN,DRPMS      ;ASCII MESSAGE CALL WITH COMMON HEADER
540 001306 104410 000000'                   END#,BEGIN
541 001312 122767 000252 176570   6:      CMPB      #252,AWAS      ;WAS DATA CORRECT ???
542 001320 001421                   BEQ      MODEM        ;BR IF YES
543 001322 016767 002312 176550   MOV      DLRCSR,CSRA   ;SET UP ERROR INFO
544 001330 017767 002304 176544   MOV      @DLRCSR,ACSR
545 001336 012767 000252 176542   MOV      #252,ASB
546 001344 016767 002272 176532   MOV      DLRDBR,WASADR
547 001352 016767 002270 176522   MOV      DLXDBR,SBADR
548                                ;*****
                                00 360 104404 000000' DATER#,BEGIN          ;DATA ERROR!!!
                                ;*****

549
550                                ;THE FOLLOWING GROUP OF BASIC TESTS ASSUME THAT THE MODEM IS DISCONNECT-
551                                ;ED FROM THE DL11-E AND AN H315 MODEM TEST CONNECTOR IS CONNECTED IN ITS
552                                ;PLACE. ALL OF THESE TESTS ARE SKIPPED IF SR1(15) IS CLEARED.
553
554 001364 005767 176426          MODEM: TST      SR1          ;IS SR1 BIT 15 = 1 ??
555 001370 100402                   BMI      DLT06         ;DO MODEM TESTS IF SET
556 001372 000167 001010          JMP      RESTR         ;SKIP MODEM TESTS IF SR1(15)=0
557
558                                ;TEST THAT "REQ TO SEND" CAN ASSERT "RING"
559                                ;-----
560
561 001376 052777 000004 002234   DLT06: BIS      #4,@DLRCSR      ;SET REQ TO SEND
562 001404 032777 000004 002:26   BIT      #4,@DLRCSR      ;DID IT SET ??
563 001412 001010                   BNE      1#            ;BR IF YES
564 001414 004767 002020          JSR      PC,STATR      ;GO SET UP ERROR INFO
565 001420 012767 000025 176460   MOV      #25,ERRTYF
566                                ;*****
                                001426 104405 000000' 000000 HRDR#,BEGIN,NULL      ;CAN'T SET REQ TO SEND
                                ;*****
567 001434 032777 040000 002176   1:      BIT      #40000,@DLRCSR      ;DID "RING" GET ASSERTED ??
568 001442 001010                   BNE      2#            ;BR IF YES
569 001444 004767 001770          JSR      PC,STATR      ;GO SET UP ERROR INFO
570 001450 012767 000025 176430   MOV      #25,ERRTYF
571                                ;*****
                                001456 104405 000000' 000000 HRDR#,BEGIN,NULL      ;"REQ TO SEND" DIDN'T ASSERT "RING"
                                ;*****
572 001464 042777 000004 002146   2:      BIC      #4,@DLRCSR      ;TURN OFF "REQ TO SEND"
573                                ;
574                                ; ** REQUEST FROM MRO FOR DL11 LINE FILTER DELAY **
575                                ;
576 001472 012705 000005          MOV      #5,R5          ;SET UP A COUNTER FOR LINE FILTER DELAY ;RG002
577 001476 005305                   DEC      R5             ;COUNT IT DOWN... ;RG002
578 001500 001376                   BNE      3#            ;BRANCH IF NOT DONE ;RG002

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DEC/X11 SYSTEM EXERCISER MACRO DEFINITION MODULE

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579
580 001502 005777 002132          TST    @DLRCSR          ;ARE ALL BITS NOW CLEAR ??
581 001506 001410                BEQ    DLT07            ;BR IF BOTH "RING" AND "REQ TO SEND " CLEARED
582 001510 004767 0C1724          JSR    PC,STATR        ;GO SET UP ERROR INFO
583 001514 012767 000025 176364   MOV    @25,ERRTYP
584                                ;*****
                                HRDR$,BEGIN,NULL      ;"RING" OR "REQ TO SEND" FAILED TO CLEAR
                                ;*****

585
586                                ;TEST THAT "SEC XMIT" ASSERTS "SEC REC" WHICH SETS "DATA SET INT"
587                                ;-----
588
589 001530 052777 000010 002102 DLT07: BIS    @10,@DLRCSR    ;SET SEC XMIT
590 001536 005777 002076          TST    @DLRCSR        ;DID DATA SET INT GET SET ??
591 001542 100410                BMI    1$             ;BR IF YES
592 001544 004767 001670          JSR    PC,STATR        ;GO SET UP ERROR INFO
593 001550 012767 000025 176330   MOV    @25,ERRTYP
594                                ;*****
                                HRDR$,BEGIN,NULL      ;DATA SET INT FAILED TO SET
                                ;*****
595 001564 022777 002010 002046 1$: CMP    @2010,@DLRCSR   ;SEC XMIT AND REC SET - DATA SET INT CLEAR
596 001572 001410                BEQ    2$             ;BR IF YES
597 001574 004767 001640          JSR    PC,STATR        ;GO SET UP ERROR INFO
598 0C1600 012767 000025 176300   MOV    @25,ERRTYP
599                                ;*****
                                HRDR$,BEGIN,NULL      ;SEC XMIT OR SEC REC FAILED TO SET - DATA SET INT FAILED TO
CLEAR
                                ;*****
600 001614 042777 000010 002016 2$: BIC    @10,@DLRCSR    ;TURN OFF SEC XMIT
601                                ;
602                                ; ** REQUEST FROM MRO FOR DL11 LINE FILTER DELAY **
603                                ;
604 001622 012705 000005          MOV    @5,R5           ;SET UP A COUNTER FOR LINE FILTER DELAY ;RG002
605 001626 005305                DEC    R5              ;COUNT IT DOWN... ;RG002
606 001630 001376                BNE    3$             ;BRANCH IF NOT DONE ;RG002
607                                ;
608 001632 005777 002002          TST    @DLRCSR        ;DID SEC XMIT GOING OFF SET DATA SET INT ?
609 001636 100410                BMI    4$             ;BR IF YES
610 001640 004767 001574          JSR    PC,STATR        ;GO SET UP ERROR INFO
611 001644 012767 000020 176234   MOV    @20,ERRTYP
612                                ;*****
                                HRDR$,BEGIN,NULL      ;CLEARING SEC XMIT FAILED TO SET DATA SET INT
                                ;*****
613 001660 005777 001754          4$: TST    @DLRCSR        ;ALL BITS NOW CLEAR
614 001664 001410                BEQ    DLT10           ;BR IF YES
615 001666 004767 001546          JSR    PC,STATR        ;GO SET UP ERROR INFO
616 001672 012767 000020 176206   MOV    @20,ERRTYP
617                                ;*****
                                HRDR$,BEGIN,NULL      ;SEC XMIT,SEC REC, OR DATA SET INT FAILED TO CLEAR
                                ;*****

618
619                                ;TEST THAT "DTR" ASSERTS "CAR DET", "CLR TO SEND", AND "DATA SET INT"
620                                ;-----
621
622 001706 005077 001726          DLT10: CLR    @DLRCSR    ;CLR THE RCVR CSR
623 001712 052777 000002 001720   BIS    @2,@DLRCSR     ;SET DATA TERM READY
624 001720 005777 001714          TST    @DLRCSR        ;DID DATA SET INT SET ??
625 001724 100407                BMI    1$             ;BR IF YES

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626 001726 004767 001506      JSR    PC,STATR      ;GO SET UP ERROR INFO
627 001732 005067 176150      CLR    ERRTP
628                                ;*****
                                HRDR$,BEGIN,NULL      ;"DTR" FAILED TO SET "DATA SET INT"
                                ;*****
629 001744 022777 030002 001666 1$: CMP    #30002,@DLRCSR;DTR,CLR TO SEND, CAR DET, SET AND DATA SET INT CLEAR ?
630 001752 001407              BEQ    2$            ;BR IF YES
631 001754 004767 001460      JSR    PC,STATR      ;GO SET UP ERROR INFO
632 001760 005067 176122      CLR    ERRTP
633                                ;*****
                                HRDR$,BEGIN,NULL      ;DTR,CAR DET, OR CLR TO SEND FAILED TO SET OR DATA SET INT F
AIFLD TO CLR
                                ;*****
634 001772 042777 000002 001640 2$: BIC    #2,@DLRCSR      ;TURN OFF DTR
635 002000 005777 001634      TST    @DLRCSR      ;DATA SET INT SHOULD HAVE SET
636 002004 100407              BMI    3$            ;BR IF IT DID
637 002006 004767 001426      JSR    PC,STATR      ;GO SET UP ERROR INFO
638 002012 005067 176070      CLR    ERRTP
639                                ;*****
                                HRDR$,BEGIN,NULL      ;DATA SET INT FAILED TO SET ON CLEARING DTR
                                ;*****
640 002024 005777 001610      3$: TST    @DLRCSR      ;ALL BITS NOW CLEAR ??
641 002030 001407              BEQ    DLT11         ;BR IF YES
642 002032 004767 001402      JSR    PC,STATR      ;GO SET UP ERROR INFO
643 002036 005067 176044      CLR    ERRTP
644                                ;*****
                                HRDR$,BEGIN,NULL      ;CLEARING DTR FAILED TO CLEAR OTHER BITS
                                ;*****
645
646                                ;TEST THAT DATA SET INTR ENAB CAN SET AND CLEAR
647                                ;-----
648
649 002050 052777 000040 001562 DLT11: BIS    #40,@DLRCSR      ;SET DATA SET I.E.
650 002056 032777 000040 001554      BIT    #40,@DLRCSR      ;DID IT SET ??
651 002064 001010              BNE    1$            ;BR IF YES
652 002066 004767 001346      JSR    PC,STATR      ;GO SET UP ERROR INFO
653 002072 012767 000027 176006      MOV    #27,ERRTP
654                                ;*****
                                HRDR$,BEGIN,NULL      ;CAN'T SET DATA SET INTR.
                                ;*****
655 002106 042777 000040 001524 1$: BIC    #40,@DLRCSR      ;CLEAR DATA SET I.E.
656 002114 005777 001520      TST    @DLRCSR      ;DID IT CLEAR ??
657 002120 001411              BEQ    DLT12         ;BR IF YES
658 002122 004767 001312      JSR    PC,STATR      ;GO SET UP ERROR INFO
659 002126 012767 000027 175752      MOV    #27,ERRTP
660                                ;*****
                                HRDR$,BEGIN,NULL      ;CAN'T CLEAR DATA SET I.E.
                                ;*****
661 002142 000463              BR     DLT13         ;SKIP NEXT TEST
662
663                                ;TEST THAT DATA SET INT CAN CAUSE A RCVR INTERRUPT WHEN ENABLED
664                                ;-----
665
666 002144 005067 001512      DLT12: CLR    INTFLG      ;INIT SOFTWARE INTR. FLAG
667 002150 016700 175634      MOV    VECTOR,R0      ;GET BAS VECTOR ADDR.
668 002154 012720 002246      MOV    #2,(R0)+        ;GO TO 2$ ON DATA SET INTERRUPT
669 002160 005001              CLR    R1              ;INIT BREAK TIMER
670 002162 052777 000040 001450      BIS    #40,@DLRCSR      ;ENABLE DATA SET INTR.

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DEC/X11 SYSTEM EXERSIZER MACRO DEFINITION MODULE

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671 002170 052777 000010 001442      BIS      #10, @DLRCSR      ;SET SEC XMIT
672 002176                                1$:
    002176 104407 000000'                BREAK$, BEGIN            ;TEMPORARY RETURN TO MONITOR....
    002202 104407 000000'                BREAK$, BEGIN            ;THEN CONTINUE AT NEXT INSTRUCTION.
673 002206 005767 001450                TST      INTFLG          ;DID INTR OCCUR YET ??
674 002212 001023                        BNE      3$              ;BR IF YES
675 002214 005301                        DEC      R1              ;COUNT THE BREAK TIMER
676 002216 001367                        BNE      1$              ;BR IF NO TIMEOUT
677 002220 004767 001214                JSR      PC, STATR       ;GO SET UP ERROR INFO
678 002224 005077 001410                CLR      @DLRCSR        ;TURN OFF THE I.E. BIT
679 002230 012767 000023 175650        MOV      #23, ERRTP
680
    002236 104405 000000' 000000        HRDR$, BEGIN, NULL      ;DATA SET INTR. FAILED TO OCCUR
;*****
681 002244 000422                        BR        DLT13          ;GO TO NEXT TEST
682 002246 042777 ^00040 001364 2$:    BIC      #40, @DLRCSR    ;TURN OFF DATA SET I.E.
683 002254 005167 001402                COM      INTFLG          ;SET SOFTWARE INTR. FLAG
684 002260 000002                        RTI                          ;RETURN CONTROL TO OTHER GUY
685 002262 032777 000040 001350 3$:    BIT      #40, @DLRCSR    ;DID INTR SERVICE TURN OFF I.E. ?
686 002270 001410                        BEQ      DLT13          ;BR IF YES
687 002272 004767 001142                JSR      PC, STATR       ;GO SET UP ERROR INFO
688 002276 012767 000023 175602        MOV      #23, ERRTP
689
    0C2304 104405 000000' 000000        HRDR$, BEGIN, NULL      ;INTR SERVICE FAILED TO CLR DATA SET I.E.
;*****
690
691                                ;TEST THAT "BREAK" BIT CAN SET AND CLEAR
692                                ;-----
693
694 002312 052777 000001 001324 DLT13: BIS      #1, @DLXCSR      ;SET BREAK BIT
695 002320 032777 000001 001316        BIT      #1, @DLXCSR    ;DID IT SET ??
696 002326 001010                        BNE      1$              ;BR IF YES
697 002330 004767 001122                JSR      PC, STATX       ;GO SET UP ERROR INFO
698 002334 012767 000025 175544        MOV      #25, ERRTP
699
    002342 104405 000000' 000000        HRDR$, BEGIN, NULL      ;CAN'T SET BREAK BIT
;*****
700 002350 042777 000001 001266 1$:    BIC      #1, @DLXCSR    ;CLEAR THE BREAK BIT
701 002356 032777 000001 001260        BIT      #1, @DLXCSR    ;DID IT CLEAR ?
702 002364 001410                        BEQ      RESTRT          ;BR IF YES
703 002366 004767 001064                JSR      PC, STATX       ;GO SET UP ERROR INFO
704 002372 012767 000025 175506        MOV      #25, ERRTP
705
    002400 104405 000000' 000000        HRDR$, BEGIN, NULL      ;BREAK BIT WON'T CLEAR
;*****

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DEC/X11 SYSTEM EXERCISER MACRO DEFINITION MODULE

```

707      ; *****
708      ; * SECTION TWO *
709      ; *****
710
711 002406      RESTRT:
712 002406 005067 001242      CLR      XEND          ;CLEAR END FLAGS
713 002412 005077 001226      CLR      @DLXCSR       ;CLEAR THE DL11 CONTROL REGS
714 002416 005077 001216      CLR      @DLRCSR       ;JUST IN CASE
715 002422 016700 175362      MOV      VECTOR,RO     ;GET START VECTOR ADDRESS
716 002426 012720 002674'    MOV      @RINT,(RO)+   ;SET UP THE RCVR AND XMIT VECTORS
717 002432 116710 175354      MOVB     BR1,(RO)
718 002436 005720              TST      (RO)+
719 002440 012720 002524'    MOV      @XINT,(RO)+
720 002444 116710 175342      MOVB     BR1,(RO)
721 002450 012703 003664'    DOAGIN: MOV      @LDTAB,R3  ;POINT TO TABLE OF LOAD SUBR. POINTERS
722 002454 012704 003674'    MOV      @MTAB,R4     ;POINT TO TABLE OF MESSAGE POINTERS
723 002460 005067 001174      1$:  CLR      RTRY        ;CLEAR RETRY FLAGS
724 002464 005777 001152      TST      @DLRDBR      ;FLUSH RCVR INPUT BUFFER REG
725 002470 005777 001146      TST      @DLRDBR
726 002474 012367 001204      MOV      (R3)+,LDOUT  ;SET UP CORRECT LOAD BUF ADDRESS POINTER
727 002500 012467 001202      MOV      (R4)+,AMESS  ;SET UP MESSAGE POINTER
728 002504 004767 000436      JSR      PC,SEGX      ;GO DO A SEGMENT
729 002510 022703 003674'    CMP      @MTAB,R3     ;DONE ALL FOUR SEGMENTS ??
730 002514 001361              BNE      1$           ;BR IF NOT
731
732
733
734
735
736
737 002516 104413 000000'    ENDIT$,BEGIN        ;SIGNAL END OF ITERATION.
738 002522 000752              BR      DOAGIN        ;MONITOR SHALL TEST END OF PASS
739
740
741

```

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```

743                                     ;THIS ROUTINE SERVICES ALL XMITTR INTRPTS. FOR ALL 256. BYTE XFERS
744                                     ;-----
745
746 002524 105777 001114          XINT:  TSTB   @DLXCSR          ;XMIT READY SET ??
747 002530 100403                    BMI     1#              ;BR IF YES
748
    002532 000004 000000' 002570'  PIRQ#,BEGIN,4#          ; QUEUE UP TO CONTINUE AT 4# AND RTI
    ;-----
749 002540 022767 004574' 001104 1#:  CMP     @DLBUFI,OPTR    ;OUTPUT 256. BYTES YET ??
750 002546 001405                    BEQ     3#              ;BR IF YES
751 002550 117777 001076 001070 2#:  MOVB   @OPTR,@DLXDBR   ;OUTPUT A CHARACTER
752 002556 005267 001070                    INC     OPTR            ;POINT TO NEXT CHAR. IN BUFFER
753 002562
    002562 000004 000000' 002662'  PIRQ#,BEGIN,6#          ; QUEUE UP TO CONTINUE AT 6# AND RTI
    ;-----
754
755 002570 105767 001061          4#:  TSTB   XEND+1          ;ANY FATAL RCVR. ERRORS PENDING ??
756 002574 001025                    BNE     5#              ;BR IF YES - STOP XMITTING
757 002576 016767 001042 175274    MOV     DLXCSR,CSRA     ;SAVE THE CSR ADDRESS
758 002604 017767 001034 175270    MOV     @DLXCSR,ACSR   ;SAVE THE CONTENTS OF THE CSR
759 002612 042777 000104 001024    BIC     @104,@DLXCSR   ;DISABLE XMITTR INTERRUPTS
760 002620 105167 001030                    COMB    XEND            ;SET XMIT END FLAG
761
762 002624 012767 000011 175254    MOV     @11,ERRTYP
763
    002632 104405 000000' 000000    HRDR#,BEGIN,NULL      ;XMITTER FALSE INTERRUPT - FATAL ERROR
    ;-----
764
765 002640 005077 000774          CLR     @DLRCSR        ;TURN OFF RCVR INTR.
766 002644 104410 000000'          END#,BEGIN              ;
767
768 002650 042777 000100 000766 5#:  BIC     @100,@DLXCSR   ;DISABLE XMITTR. INTERRUPTS
769 002656 104400 000000'          EXIT#,BEGIN            ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
770
771 002662 105767 000767          6#:  TSTB   XEND+1          ;ANY FATAL RCVR. ERRORS PENDING ??
772 002666 001370                    BNE     5#              ;BR IF YES
773 002670 104400 000000'          EXIT#,BEGIN            ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
774
775                                     ;THIS ROUTINE SERVICES RECEIVER INTERRUPTS FOR ALL 256. BYTE XFERS
776                                     ;-----
777
778 002674 105777 000740          RINT:  TSTB   @DLRCSR        ;RCVR DONE SET ??
779 002700 100403                    BMI     1#              ;BR IF YES
780
    002702 000004 000000' 002754'  PIRQ#,BEGIN,3#          ; QUEUE UP TO CONTINUE AT 3# AND RTI
    ;-----
781 002710 005777 000726          1#:  TST     @DLRDBR        ;OVERRUN/PARITY/FRAMING ERRORS ??
782 002714 100003                    BPL     2#              ;BR IF NONE
783
    002716 000004 000000' 003046'  PIRQ#,BEGIN,5#          ; QUEUE UP TO CONTINUE AT 5# AND RTI
    ;-----
784 002724 022767 005174' 000716 2#:  CMP     @BUFEND,IPTR   ;INPUT BUFFER FULL ??
785 002732 001405                    BEQ     7#              ;BR IF YES
786 002734 117777 000702 000706    MOVB   @DLRDBR,@IPTR  ;READ THE DL INPUT BUFFER REG.
787 002742 005267 000702                    INC     IPTR            ;POINT TO NEXT CHAR. POSITION
788 002746          7#:

```

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```

002746 000004 000000' 003134'      ;-----
PIRQ$,BEGIN,6$                      ; QUEUE UP TO CONTINUE AT 6$ AND RTI
;-----
789
790 002754 105767 000674          3$: TSTB  XEND          ;ANY FATAL XMITTR ERROR PENDING
791 002760 001025                    BNE   4$          ;BR IF YES
792 002762 016767 000652 175110    MOV   DLRCR,CSRA  ;SAVE THE RCVR. CSR ADDRESS
793 002770 017767 000644 175104    MOV   @DLRCR,ACSR ;SAVE CONTENTS OF CSR
794 002776 042777 000100 000634    BIC   #100,@DLRCR ;TURN OFF THE RCVR.
795 003004 105167 000645                    COMB  XEND+1      ;SET FATAL RCVR ERROR FLAG
796
797 003010 012767 000011 175070    MOV   #11,ERRTYP
798                                ;*****
003016 104405 000000' 000000    HRDER$,BEGIN,NULL ;RECEIVER FALSE INTERRUPT - FATAL ERROR
;*****
799
800 003024 005077 000614                    CLR   @DLXCSR    ;DISABLE XMITTR TOO
801 003030 104410 000000'                    END$,BEGIN      ;
802
803 003034 042777 000100 000576    4$: BIC   #100,@DLRCR ;DISABLE RCVR INTERRUPTS
804 003042 104400 000000'                    EXIT$,BEGIN     ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
805
806 003046 105767 000602          5$: TSTB  XEND          ;ANY FATAL XMITTR ERRORS PENDING ??
807 003052 001370                    BNE   4$          ;BR IF YES
808 003054 016767 000560 175016    MOV   DLRCR,CSRA ;SAVE CSR ADDRESS
809 003062 017767 000552 175012    MOV   @DLRCR,ACSR ;SAVE CONTENTS OF CSR
810 003070 017767 000546 175006    MOV   @DLRDBR,ASTAT ;SAVE THE ERROR FLAGS
811 003076 042777 000100 000534    BIC   #100,@DLRCR ;DISABLE RCVR INTR.
812
813 003104 012767 000017 174774    MOV   #17,ERRTYP
814                                ;*****
003112 104405 000000' 000000    HRDER$,BEGIN,NULL ;OVERRUN - PARITY - FRAMING ERROR
;*****
815
816 003120 005077 000520                    CLR   @DLXCSR    ;DISABLE XMITTR TOO
817 003124 105267 000530                    INCB  RTRY       ;SET RETRY FLAG
818 003130 104400 000000'                    EXIT$,BEGIN     ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
819
820 003134 105767 000514          6$: TSTB  XEND          ;ANY FATAL XMITTR ERRORS PENDING ??
821 003140 001335                    BNE   4$          ;BR IF YES
822 003142 104400 000000'                    EXIT$,BEGIN     ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.

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824                                     ;THIS ROUTINE CONTROLS THE EXECUTION OF EACH OF THE FOUR DATA PATTERNS
825
826 003146 000240                      SEGX:  NOP                    ;DO NOTHING FOR NOW
827 003150 004767 000320              1$:  JSR      PC,CLDLBF        ;GO CLEAR BUFFERS
828 003154 004777 000524              JSR      PC,@LDOUT        ;GO SET UP PATTERN
829 003160 004767 000106              JSR      PC,KICKOF       ;GO KICK OFF XMITTR AND RCVR
830 003164 005002                      CLR      R2              ;INITIALIZE BREAK TIMER
831 003166                               2$:
   003166 104407 000000'              BREAK$,BEGIN            ;TEMPORARY RETURN TO MONITOR....
   003172 104407 000000'              BREAK$,BEGIN            ;THEN CONTINUE AT NEXT INSTRUCTION.
832 003176 005767 000452              TST     XEND            ;ANY FATAL ERRORS PENDING ??
833 003202 001402                      BEQ     3$              ;BR IF NOT
834 003204 104400 000000'              EXIT$,BEGIN            ;EXIT TO MONITOR. MODULE WAIT FOR INTERRUPT.
835 003210 105767 000444              3$:  TSTB    RTRY          ;RETRY FLAG SET ??
836 003214 001411                      BEQ     4$              ;BR IF NOT
837 003216 105067 000436              CLRB   RTRY            ;CLEAR THE FLAG
838 003222 105267 000433              INCB   RTRY+1          ;COUNT ONE RETRY
839 003226 122767 000003 000425      CMPB   #3,RTRY+1        ;TRIED THREE TIMES ??
840 003234 001345                      BNE    1$              ;BR IF NOT - TRY IT AGAIN
841 003236 000406                      BR     5$              ;REPORT IT AND GO TO NEXT SEGMENT
842 003240 022767 005174' 000402      4$:  CMP     @BUFEND,IPTR    ;RECEIVED 256. CHARS. ??
843 003246 001406                      BEQ     7$              ;BR IF YES
844 003250 005302                      DEC     R2              ;DECREMENT BREAK COUNTER
845 003252 001345                      BNE    2$              ;BR IF NO TIMEOUT
846 003254                               5$:
   003254 104403 000000' 003706'      MSGN$,BEGIN,AMESS      ;ASCII MESSAGE CALL WITH COMMON HEADER
847 003262 000207                      6$:  RTS     PC            ;GO TO NEXT SEGMENT
848 003264 004767 000034              7$:  JSR     PC,CHKDAT     ;GO COMPARE IN/OUT DATA
849 003270 000207                      RTS     PC              ;GO TO NEXT SEGMENT
850
851                                     ;THIS ROUTINE KICKS OFF ALL 256. BYTE TRANSFERS
852                                     ;-----
853
854 003272 012767 004174' 000352      KICKOF: MOV    #DLBUF0,OPTR ;POINT TO BEGINNING OF OUTPUT BUFFER
855 003300 012767 004574' 000342      MOV    #DLBUF1,IPTR     ;POINT TO BEGINNING OF INPUT BUFFER
856 003306 052777 000104 000330      BIS    #104,@DLXCSR     ;TURN ON XMITTR
857 003314 052777 000100 000316      BIS    #100,@DLRCSR     ;TURN ON RCVR.
858 003322 000207                      RTS     PC              ;RETURN TO CALLING SEGMENT
859
860                                     ;THIS ROUTINE CHECKS FOR AND REPORTS DATA COMPARE ERRORS
861                                     ;-----
862
863 003324 042777 000100 000312      CHKDAT: BIC    #100,@DLXCSR ;DISABLE XMITTR INTR.
864 003332 042777 000100 000300      BIC    #100,@DLRCSR     ;DISABLE RCVR INTR.
865 003340 012700 004174'              MOV    #DLBUF0,R0       ;R0 POINTS TO OUTPUT BUFFER
866 003344 012701 004574'              MOV    #DLBUF1,R1       ;R1 POINTS TO INPUT BUFFER
867 003350 122021                      1$:  CMPB   (R0)+,(R1)+     ;COMPARE INPUT WITH OUTPUT
868 003352 001004                      BNE    2$              ;BR IF NOT EQUAL
869 003354 022701 005174'              3$:  CMP    @BUFEND,R1     ;END OF THE BUFFERS ??
870 003360 001373                      BNE    1$              ;BR IF NOT
871 003362 000207                      RTS     PC              ;RETURN TO CALLER
872
873 003364 016767 000250 174506      2$:  MOV    DLRCSR,CSRA     ;SAVE THE CSR ADDRESS
874 003372 114067 174510              MOVB   -(R0),ASB        ;SAVE THE SHOULD BE DATA
875 003376 042767 177400 174502      BIC    #177400,ASB      ;ZERO HI BYTE
876 003404 010067 174472              MOV    R0,SBADR        ;SAVE THE SHOULD BE ADDRESS
877 003410 114167 174474              MOVB   -(R1),AWAS      ;SAVE THE WAS DATA

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878 003414 042767 177400 174466      BIC    #177400,AWAS    ;CLEAR OUT HI BYTE
879 003422 010167 174456      MOV    R1,WASADR      ;SAVE THE WAS ADDRESS
880
881                                ;*****
      003426 104404 000000'      DATER$,BEGIN          ;DATA ERROR!!!
                                ;*****
882
883 003432 105720      TSTB   (R0)+          ;POINT TO NEXT BYTE IN THE BUFFERS
884 003434 105721      TSTB   (R1)+
885 003436 000746      BR     3$            ;GO CHECK NEXT BYTE
886
887                                ;THESE ROUTINES SET UP THE ERROR INFORMATION FOR THE BASIC TESTS
888                                ;-----
889
890 003440 016767 000174 174432  STATR: MOV    DLRCR,CSRA    ;SAVE THE CSR ADDRESS
891 003446 017767 000166 174426      MOV    @DLRCR,ACSR    ;SAVE THE CONTENTS OF THE CSR
892 003454 000207      RTS    PC            ;RETURN TO BASIC TESTS
893
894 003456 016767 000162 174414  STATX: MOV    DLXCSR,CSRA  ;SAVE THE CSR ADDRESS
895 003464 017767 000154 174410      MOV    @DLXCSR,ACSR  ;SAVE THE CONTENTS OF THE CSR
896 003472 000207      RTS    PC            ;RETURN TO THE BASIC TESTS
897
898                                ;THIS ROUTINE IS USED TO CLEAR THE INPUT/OUTPUT BUFFERS
899                                ;-----
900
901 003474 012700 004174'      CLDLBF: MOV   #DLBUF0,R0    ;POINT R0 TO BEGINNING OF BUFFERS
902 003500 005020      1$:  CLR    (R0)+          ;CLEAR ONE WORD - UPDATE POINTER
903 003502 022700 005174'      CMP    #BUFEND,R0         ;DONE 256. BYTES ??
904 003506 001374      BNE    1$              ;BR IF NOT
905 003510 000207      RTS    PC            ;RETURN TO CALLING SEGMENT
906
907                                ;THIS ROUTINE LOADS THE OUTPUT BUFFER WITH A NULL-DEL-NULL PATTERN
908                                ;-----
909
910 003512 012700 004174'      LDOUT1: MOV   #DLBUF0,R0    ;SET UP POINTER
911 003516 105020      1$:  CLR    (R0)+          ;MOV A NULL CHAR
912 003520 112720 000377      MOVB   #377,(R0)+        ;MOV A DELETE CHAR.
913 003524 022700 004574'      CMP    #DLBUFI,R0        ;BUFFER FULL ???
914 003530 001372      BNE    1$              ;BR IF NOT
915 003532 000207      RTS    PC            ;RETURN TO CALLING SEGMENT
916
917                                ;THIS ROUTINE IS USED TO LOAD AN ASCENDING BINARY COUNT PATTERN
918                                ;-----
919
920
921 003534 012700 004174'      LDOUT2: MOV   #DLBUF0,R0    ;SET UP POINTER
922 003540 005001      CLR    R1              ;USE R1 TO GENERATE THE PATTERN
923 003542 110120      1$:  MOVB   R1,(R0)+        ;LOAD ONE CHAR.
924 003544 022700 004574'      CMP    #DLBUFI,R0        ;BUFFER FULL ???
925 003550 001402      BEQ    2$              ;BR IF YES
926 003552 105201      INCB   R1              ;GENERATE NEXT CHAR.
927 003554 000772      BR     1$              ;GO MOVE IT
928 003556 000207      2$:  RTS    PC            ;RETURN TO CALLING SEGMENT
929
930                                ;THIS ROUTINE IS USED TO LOAD THE DESCENDING BINARY COUNT PATTERN
931                                ;-----
932

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933 003560 012700 004174'      LDOUT3: MOV      #DLBUFO,RO      ;SET UP POINTER
934 003564 012701 000377      MOV      #377,R1          ;START R1 AT 377
935 003570 110120                1$:      MOVB     R1,(RO)+      ;LOAD ONE CHAR.
936 003572 022700 004574'      CMP      #DLBUFI,RO      ;AT END OF THE BUFFER ??
937 003576 001402                BEQ      2$              ;BR IF YES
938 003600 105301                DECB    R1              ;GENERATE NEXT CHAR.
939 003602 000772                BR      1$              ;GO MOVE IT
940 003604 000207                2$:      RTS      PC          ;RETURN TO CALLING SEGMENT
941
942                                ;THIS ROUTINE LOADS THE WORST CASE PATTERN
943                                -----
944
945 003606 012700 004174'      LDOUT4: MOV      #DLBUFO,RO      ;SET UP POINTERS
946 003612 012701 005176'      1$:      MOV      #WCASE,R1      ;POINT TO MONITOR'S WORST CASE PATTERN
947 003616 012120                2$:      MOV      (R1)+,(RO)+    ;LOAD ONE WORD
948 003620 022700 004574'      CMP      #DLBUFI,RO      ;BUFFER FULL ???
949 003624 001404                BEQ      3$              ;BR IF YES
950 003626 022701 005276'      CMP      #WCASEE,R1      ;END OF WORST CASE PATTERN ??
951 003632 001767                BEQ      1$              ;GO RESET R1
952 003634 000770                BR      2$              ;GO RESET R1
953 003636 000207                3$:      RTS      PC          ;RETURN TO CALLING SEGMENT

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```

955 ;VARIABLES, FLAGS, MESSAGES, AND BUFFERS
956 -----
957
958 003640 000000 DLRCR: OPEN ;CONTAINS ADDRESS OF RCVR CSR
959 003642 000000 DLRDBR: OPEN ;CONTAINS ADDRESS OF RCVR DBR
960 003644 000000 DLXCSR: OPEN ;CONTAINS ADDRESS OF XMITTR CSR
961 003646 000000 DLXDBR: OPEN ;CONTAINS ADDRESS OF XMITTR DBR
962
963 003650 000000 IPTR: OPEN ;CONTAINS POINTER TO INPUT BUFFER
964 003652 000000 OPTR: OPEN ;CONTAINS POINTER TO OUTPUT BUFFER
965
966 003654 000000 XEND: OPEN ;FATAL ERROR END FLAGS
967 003656 000000 EPCTR: OPEN ;END OF PASS COUNTER
968 003660 000000 RTRY: OPEN ;RETRY FLAG AND COUNTER
969 003662 000000 INTFLG: OPEN ;SOFTWARE INTR. FLAG USED BY BASIC TESTS
970
971 003664 003512' LDTAB: LDOUT1 ;POINTER TO 1ST LOAD BUFFER SUBR.
972 003666 003534' LDOUT2 ;POINTER TO 2ND LOAD BUFFER ROUTINE
973 003670 003560' LDOUT3 ;POINTER TO 3RD LOAD BUFFER ROUTINE
974 003672 003606' LDOUT4 ;POINTER TO 4TH LOAD BUFFER ROUTINE
975 003674 003716' MTAB: MSG1 ;POINTER TO MESSAGE 1
976 003676 003757' MSG2 ;POINTER TO MESSAGE 2
977 003700 004022' MSG3 ;POINTER TO MESSAGE 3
978 003702 004067' MSG4 ;POINTER TO MESSAGE 4
979
980 003704 000000 LDOUT: OPEN ;CONTAINS POINTER TO LOAD BUFFER SUBR.
981 003706 003716' AMESS: MSG1 ;MESSAGE POINTERS
982 003710 177777 -1 ;TERMINATOR
983 003712 004125' DRPMS: MSG5 ;MESSAGE POINTER
984 003714 177777 -1 ;TERMINATOR
985 003716 045 116 125 MSG1: .ASCIZ /*NULL-DEL-NULL SEQUENCE ABORTED*/
003721 114 114 055
003724 104 105 114
003727 055 116 125
003732 114 114 040
003735 123 105 121
003740 125 105 116
003743 103 105 040
003746 101 102 117
003751 122 124 105
003754 104 045 000
986 003757 045 102 111 MSG2: .ASCIZ /*BINARY UP COUNT SEQUENCE ABORTED*/
003762 116 101 122
003765 131 040 125
003770 120 040 103
003773 117 125 116
003776 124 040 123
004001 105 121 125
004004 105 116 103
004007 105 040 101
004012 102 117 122
004015 124 105 104
004020 045 000
987 004022 045 102 111 MSG3: .ASCIZ /*BINARY DOWN COUNT SEQUENCE ABORTED*/
004025 116 101 122
004030 131 040 104
004033 117 127 116

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```

004036 040 103 117
004041 125 116 124
004044 040 123 105
004047 121 125 105
004052 116 103 105
004055 040 101 102
004060 117 122 124
004063 105 104 045
004066 000
988 004067 045 127 117 MSG4: .ASCIZ /*WORST CASE SEQUENCE ABORTED*/
004072 122 123 124
004075 040 103 101
004100 123 105 040
004103 123 105 121
004106 125 105 116
004111 103 105 040
004114 101 102 117
004117 122 124 105
004122 104 045 000
989 004125 045 106 101 MSG5: .ASCIZ /*FATAL ERROR IN STATIC REGISTER TESTS*/
004130 124 101 114
004133 040 105 122
004136 122 117 122
004141 040 111 116
004144 040 123 124
004147 101 124 111
004152 103 040 122
004155 105 107 111
004160 123 124 105
004163 122 040 124
004166 105 123 124
004171 123 045 000

990 .EVEN
991
992 ;512 WORDS RESERVED FOR TWO 256. BYTE BUFFERS
993 ;-----
994
995 004174 DLBUFD: .BLKB 256. ;RSVD FOR OUTPUT BUFFER
996 004574 DLBUFI: .BLKB 256. ;RSVD FOR INPUT BUFFER
997 005174 000000 BUFEND: 0 ;MARK END OF BUFFER AREA
998
999
1000 005176 177776 000001 177775 WCASE: .WORD 177776.1,177775.2,177773.4,177767.10
005204 000002 177773 000004
005212 177767 000010
1001 005216 177757 000020 177737 .WORD 177757.20,177737.40,177677.100,177577.200
005224 000040 177677 000100
005232 177577 000200
1002 005236 177377 000400 176777 .WORD 177377.400,176777.1000,175777.2000,173777.4000
005244 001000 175777 002000
005252 173777 004000
1003 005256 167777 010000 157777 .WORD 167777.10000,157777.20000,137777.40000,77777.100000
005264 020000 137777 040000
005272 077777 100000
1004 005276 WCASEE:
1005
1006 000001 .END

```


Symbol table

ACSR	000102R	CLKSP#	104422	ICONT	000036R	OTOA#	104420	R6	=#000006
ADDR	000006R	CONFIG	000056R	ICOUNT	000040R	PARPRE	002000	R7	=#000007
ADDR22	001000	CSRA	000100R	IDNUM	000122R	PASCNT	000034R	SBADR	000102R
AMESS	003706R	DATCK#	104411	INDPAR	000040	PDPF11	000002	SEGX	003146R
APTPRE	000200	DATER#	104404	INIT	000030R	PDPLSI	020000	SOF CNT	000042R
ASB	000106R	DLBUFI	004574R	INTFLG	003662R	PDP44	100000	SOFR#	104406
ASTAT	000104R	DLBUFO	004174R	INTR	000120R	PDP60	004000	SOFPAS	000046R
AUTO	000010	DLINIT	000260R	IPTR	003650R	PDP70	010000	SPOINT	000032R
AWAS	000110R	DLRCSR	003640R	KICKOF	003272R	PIRQ#	000004	SPSI2	000040
BEGIN	000000R	DLRDBR	003642R	KTPRES	000400	POPSP	005726	SR1	000016R
BIT0	000001	DLT01	000334R	KTXTND	040000	POPSP2	022626	SR2	000020R
BIT1	000002	DLT02	000374R	LDOU	003704R	PRHMS#	000002	SR3	000022R
BIT10	002000	DLT03	000436R	LDOU1	003512R	PRTY	000000	SR4	000024R
BIT11	004000	DLT04	000556R	LDOU2	003534R	PRTY0	000000	START	000226R
BIT12	010000	DLT05	000744R	LDOU3	003560R	PRTY1	000040	STAT	000026R
BIT13	020000	DLT06	001376R	LDOU4	003606R	PRTY2	000100	STATR	003440R
BIT14	040000	DLT07	001530R	LDTAB	003664R	PRTY3	000140	STATX	003456R
BIT15	100000	DLT10	001706R	MFP22#	104416	PRTY4	000200	SVRO	000062R
BIT2	000004	DLT11	002050R	MODEM	001364R	PRTY5	000240	SVR1	000064R
BIT3	000010	DLT12	002144R	MODNAM	000000R	PRTY6	000300	SVR2	000066R
BIT4	000020	DLT13	002312R	MODREV	000224R	PRTY7	000340	SVR3	000070R
BIT5	000040	DLXCSR	003644R	MODSP	000224R	PS	177776	SVR4	000072R
BIT6	000100	DLXDBR	003646R	MSG#	104403	PSW	177776	SVR5	000074R
BIT7	000200	DOAGIN	002450R	MSG#	104402	PUSH	005746	SVR6	000076R
BIT8	000400	DRPMS	003712R	MSG1	003716R	PUSH2	024646	SYSCNT	000052R
BIT9	001000	DVID1	000014R	MSG2	003757R	PWRFLG	000002	TRPDFD	000023
BREAK#	104407	ECCHEM	000100	MSG3	004022R	QMON2?	000010	USTACK	000001
BR1	000012R	ENDIT#	104413	MSG4	004067R	RAND#	104417	VECTOR	000010R
BR2	000013R	END#	104410	MSG5	004125R	RANNUM	000054R	WASADR	000104R
BTOD#	104421	EPCTR	003656R	MTAB	003674R	RESTR	002406R	WCASE	005176R
BUFEND	005174R	ERRTYP	000106R	NCPUOP	000020	RES1	000056R	WCASEE	005276R
CAPRES	000004	EXIT#	104400	NDAPTY	000002	RES2	000060R	WDFR	000116R
CDATA#	104412	GETPA#	104415	NULL	000000	RH70	001000	WOTO	000114R
CHKDAT	003324R	GWBUF#	104414	OPEN	000000	RINT	002674R	XEND	003654R
CKMNG#	000001	HRDCNT	000044R	OPTR	003652R	RSTRT	000112R	XFLAG	000005R
CLDLBF	003474R	HRDR#	104405			RTRY	003660R	XINT	002524R
CLKPRE	000001	HRDPAS	000050R						

. ABS. 000000 000 (P,I,GBL,ABS,OVR)
005276 001 (RW,I,LCL,REL,CON)

Errors detected: 0

*** Assembler statistics

Work file reads: 0
Work file writes: 0
Size of work file: 13285 Words (52 Pages)
Size of core pool: 19402 Words (74 Pages)
Operating system: RSX-11M/PLUS (Under VAX/VMS)

Elapsed time: 00:01:36.98
DLB.OBJ,DLB.LST/CR/-SP=DDXCOM,DLB

SYMBOL CROSS REFERENCE

CREF V02

SYMBOL	VALUE	REFERENCES									
ACSR	000102 R	04-367	*5-544	*7-758	*7-793	*7-809	*8-891	*8-895			
ADDR	000006 R	04-367	5-382								
ADDR22	= 001000	04-367									
AMESS	003706 R	*6-727	8-846	*9-981							
APTPRE	= 000200	04-367									
ASB	000106 R	04-367	*5-545	*8-874	*8-875						
ASTAT	000104 R	04-367	*7-810								
AUTO	= 000010	04-367									
AWAS	000110 R	04-367	*5-527	5-541	*8-877	*8-878					
BEGIN	000000 R	04-367	5-422	5-423	5-424	5-433	5-434	5-435	5-445	5-446	
		5-447	5-453	5-454	5-455	5-467	5-467	5-474	5-475	5-476	
		5-484	5-485	5-486	5-500	5-501	5-502	5-508	5-509	5-510	
		5-515	5-515	5-524	5-525	5-526	5-538	5-539	5-540	5-548	
		5-566	5-571	5-584	5-594	5-599	5-612	5-617	5-628	5-633	
		5-639	5-644	5-654	5-660	5-672	5-672	5-680	5-689	5-699	
		5-705	6-737	7-748	7-753	7-763	7-766	7-769	7-773	7-780	
		7-783	7-788	7-798	7-801	7-804	7-814	7-818	7-822	8-831	
		8-831	8-834	8-846	8-881						
BIT0	= 000001	04-367									
BIT1	= 000002	04-367									
BIT10	= 002000	04-367									
BIT11	= 004000	04-367	5-408								
BIT12	= 010000	04-367									
BIT13	= 020000	04-367									
BIT14	= 040000	04-367									
BIT15	= 100000	04-367									
BIT2	= 000004	04-367									
BIT3	= 000010	04-367									
BIT4	= 000020	04-367									
BIT5	= 000040	04-367									
BIT6	= 000100	04-367									
BIT7	= 000200	04-367									
BIT8	= 000400	04-367									
BIT9	= 001000	04-367									
BREAK#	= 104407	04-367	5-467	5-467	5-515	5-515	5-672	5-672	8-831	8-831	
BR1	000012 R	04-367	5-464	5-494	6-717	6-720					
BR2	000013 R	04-367									
BTOD#	= 104421	04-367									
BUFEND	005174 R	7-784	8-842	8-869	8-903	*9-997					
CAPRES	= 000004	04-367									
CDATA#	= 104412	04-367									
CHKDAT	003324 R	8-848	*8-863								
CHKNG#	= 000001	04-367									
CLDLBF	003474 R	8-827	*8-901								
CLKPRE	= 000001	04-367									
CLKSP#	= 104422	04-367									
CONFIG	000056 R	04-367									
CSRA	000100 R	04-367	*5-543	*7-757	*7-792	*7-808	*8-873	*8-890	*8-894		
DATCK#	= 104411	04-367									
DATER#	= 104404	04-367	5-548	8-881							
DLBUFI	004574 R	7-749	8-855	8-866	8-913	8-924	8-936	8-948	*9-996		
DLBUFO	004174 R	8-854	8-865	8-901	8-910	8-921	8-933	8-945	*9-995		

SYMBOL CROSS REFERENCE

CREF V02

SYMBOL	VALUE	REFERENCES
DLINIT	000260 R	#5-396
DLRCSR	003640 R	#5-383 5-396 5-397 5-418 5-495 5-496 5-503 5-504 5-511
		5-521 5-528 5-532 5-535 5-543 5-544 5-561 5-562 5-567
		5-572 5-580 5-589 5-590 5-595 5-600 5-608 5-613 5-622
		5-623 5-624 5-629 5-634 5-635 5-640 5-649 5-650 5-655
		5-656 5-670 5-671 5-678 5-682 5-685 6-714 7-765 7-778
		7-792 7-793 7-794 7-803 7-808 7-809 7-811 8-857 8-864
		8-873 8-890 8-891 #9-958
DLRDBR	003642 R	#5-385 5-399 5-400 5-527 5-546 6-724 6-725 7-781 7-786
		7-810 #9-959
DLT01	000334 R	#5 418
DLT02	000374 R	5-419 #5-429
DLT03	000436 R	5-430 #5-440
DLT04	000556 R	5-450 #5-460
DLT05	000744 R	5-481 #5-491
DLT06	001376 R	5-555 #5-561
DLT07	001530 R	5-581 #5-589
DLT10	001706 R	5-614 #5-622
DLT11	002050 R	5-641 #5-649
DLT12	002144 R	5-657 #5-666
DLT13	002312 R	5-661 5-681 5-686 #5-694
DLXCSR	003644 R	#5-387 5-398 5-412 5-429 5-440 5-441 5-448 5-449 5-466
		5-477 5-480 5-512 5-522 5-529 5-536 5-694 5-695 5-700
		5-701 6 713 7-746 7-757 7-758 7-759 7-768 7-800 7-816
		8-856 8-863 8-894 8-895 #9-960
DLXDBR	003646 R	#5-389 5-514 5-547 7-751 #9-961
DOAGIN	002450 R	#6-721 6-738
DRPHS	003712 R	5-423 5-434 5-446 5-454 5-475 5-485 5-501 5-509 5-525
		5-539 #9-983
DVID1	000014 R	#4-367
ECCMEM	= 000100	#4-367
ENDIT#	= 104413	#4-367 6-737
END#	= 104410	#4-367 5-424 5-435 5-447 5-455 5-476 5-486 5 502 5 510
		5-526 5-540 7-766 7-801
EPCTR	003656 R	#9-967
ERRTYP	000106 R	#4-367 #5-421 #5-432 #5-444 #5-452 #5-473 #5-483 #5-499 #5-507
		#5-523 #5-537 #5-565 #5-570 #5-583 #5-593 #5-598 #5-611 #5-616
		#5-627 #5-632 #5-638 #5-643 #5-653 #5-659 #5-679 #5-688 #5-698
		#5-704 #7-762 #7-797 #7-813
EXIT#	= 104400	#4-367 7 769 7-773 7-804 7-818 7-822 8-834
GETPA#	= 104415	#4-367
GMBUF#	= 104414	#4-367
HRDCNT	000044 R	#4-367
HRDER#	= 104405	#4-367 5-422 5-433 5-445 5-453 5-474 5-484 5-500 5 508
		5-524 5-538 5-566 5-571 5-584 5-594 5-599 5-612 5-617
		5-628 5-633 5-639 5-644 5-654 5-660 5-680 5-689 5-699
		5-705 7-763 7-798 7-814
HRDPAS	000050 R	#4-367
ICONT	000036 R	#4 367
ICOUNT	000040 R	#4-367
IDNUM	000122 R	#4-367
INDPAR	= 000040	#4-367

SYMBOL CROSS REFERENCE

CREF V02

SYMBOL	VALUE	REFERENCES	CREF	V02
INIT	000030 R	*4-367		
INTFLG	003662 R	*5-460 5 468 *9-969	*5-478	*5-491 5-516 *5-530 *5-666 5-673 *5-683
INTR	000120 R	*4-367		
IPTR	003650 R	7-784 7 786	*7-787	8-842 *8-855 *9-963
KICKOF	003272 R	8-829	*8-854	
KTPRES	= 000400	*4-367		
KTXTND	= 040000	*4-367		
LDOUT	003704 R	*6-726 8-828		*9-980
LDOUT1	003512 R	*8-910		9-971
LDOUT2	003534 R	*8-921		9-972
LDOUT3	003560 R	*8-933		9-973
LDOUT4	003606 R	*8-945		9-974
LDTAB	003664 R	6-721		*9-971
MAP22\$	= 104416	*4-367		
MODEM	001364 R	5-542		*5-554
MODNAM	000000 R	*4-367		
MODREV	000224 R	*4-377		
MODSP	000224 R	4-367		*4-367
MSGN\$	= 104403	*4-367 5-423 5-525 5-539	5-434 5-446 8-846	5-454 5-475 5-485 5-501 5-509
MSG\$	= 104402	*4-367		
MSG1	= 104401	*4-367		
MSG1	003716 R	9-975		9-981 *9-985
MSG2	003757 R	9-976		*9-986
MSG3	004022 R	9-977		*9-987
MSG4	004067 R	9-978		*9-988
MSG5	004125 R	9-983		*9-989
MTAB	003674 R	6-722		6-729 *9-975
NCPUOP	= 000020	*4-367		
NOAPTY	= 000002	*4-367		
NULL	= 000000	*4-367 5-422 5-524 5-628 5-705	5-433 5-566 5-633 7-763	5-445 5-571 5-644 7-814 5-453 5-584 5-654 7-814 5-474 5-594 5-660 5-484 5-599 5-680 5-500 5-612 5-689 5-508 5-617 5-699
OPEN	= 000000	4-367 4-367 4-367 9-966 7-749	4-367 4-367 *4-367 9-958 9-967 9-968 *7-752	4-367 4-367 4-367 4-367 9-959 9-960 9-961 4-367 4-367 4-367 4-367 9-963 9-964 *9-964
OPTR	00352 R	7-749	*7-752	*8-854 *9-964
OTOA\$	= 104420	*4-367		
PARPRE	= 002000	*4-367		
PASCNT	000034 P	*4-367		
PDPF11	= 000002	*4-367		
PDPLSI	= 020000	*4-367		
PDP44	= 100000	*4-367		
PDP60	= 004000	*4-367		
PDP70	= 010000	*4-367		
PIRQ\$	= 000004	*4-367 7-748	7-753	7-780 7-783 7-788
POPSP	= 005726	*4-367		
POPSP2	= 022626	*4-367		
PRHMS\$	= 000002	*4-367		

SYMBOL CROSS REFERENCE

CREF V02

SYMBOL	VALUE	REFERENCES
		04-367 4-367 4-367 04-367 4-367 4-367 04-367 4-367 4-367 4-367
		04-367 4-367 4-367 04-367 4-367 4-367 04-367 4-367 4-367 4-367
		04-367 4-367 4-367 04-367 4-367 4-367 04-367 4-367 4-367 4-367
		04-367 4-367 4-367 04-367 4-367 4-367 04-367 4-367 4-367 4-367
		04-367 4-367 4-367 04-367 4-367 4-367 04-367 4-367 4-367 4-367
USTACK	* 000001	04-367
VECTOR	000010 R	04-367 5-461 5-492 5-667 6-715
WASADR	000104 R	04-367 *5-546 *8-879
WCASE	005176 R	8-946 09-1000
WCASEE	005276 R	8-950 09-1004
WDFR	000116 R	04-367
WOTO	000114 R	04-367
XEND	003654 R	*6-712 7-755 *7-760 7-771 7-790 *7-795 7-806 7-820 8-832
		09-966
XFLAG	000005 R	04-367
XINT	002524 R	6 719 07-746

