DUP-11

DUP-11 DCLT
CZDCLBO

AH-S975B-MC
FICHE 1 OF 2

OCT 1983
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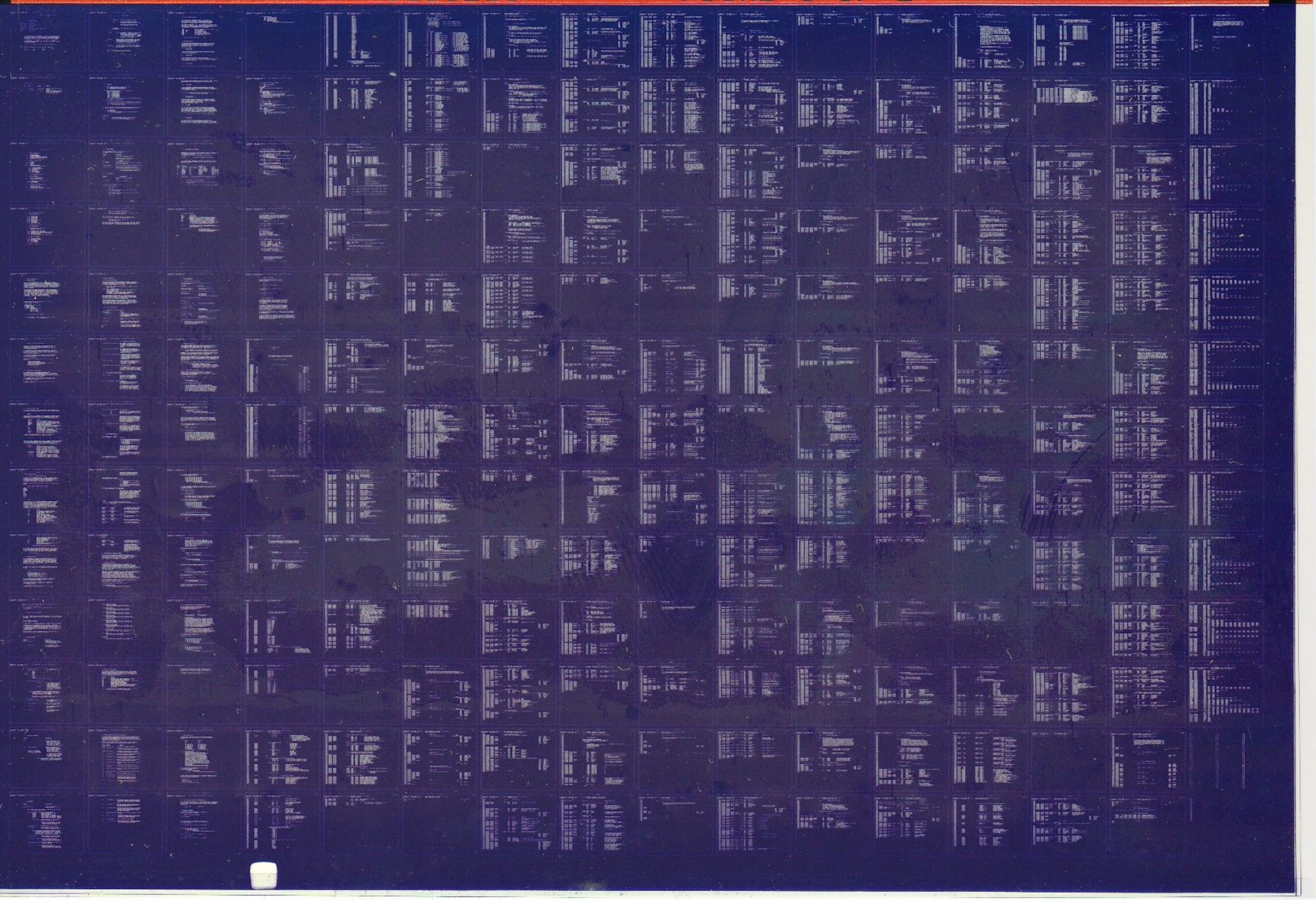

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1                               .TITLE  CZDCLB DUP-11 DATA COMM. LINK TEST
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IDENTIFICATION

PRODUCT CODE: AC-S974B-MC

PRODUCT NAME: CZDCLB0 DUP-11 DCLT

PRODUCT DATE: JUNE 1983

MAINTAINER: MERRIMACK DIAGNOSTIC ENGINEERING

AUTHOR: ERNIE COOPER

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REVISION HISTORY:

	REV	DATE	AUTHOR	REASON
	A	24-MAR-82	ERNIE COOPER	ORIGINAL ISSUE, DCLT FOR THE DUP-11
**JPB	B	29-JUN-83	JOHN BEIKE	DTR WAS NOT BEING SET WHILE IN MODEM LOCAL LOOP-BACK WHICH CAUSED CTS NEVER TO COME TRUE. FIX: SET DTR WITH RTS.

TABLE OF CONTENTS

1.0 GENERAL INFORMATION

1.1 PROGRAM ABSTRACT

THIS DCLT (DATA COMMUNICATION LINK TEST) PROGRAM IS MEANT TO PROVIDE FIELD SERVICE WITH A TOOL TO MAINTAIN DUP-11 COMMUNICATION LINKS. THIS PROGRAM ALLOWS THE DUP-11 TO COMMUNICATE WITH OTHER SYNCHRONOUS(INCLUDING DDCMP) DEVICES ON POINT TO POINT OR MULTIDROP NETWORKS. THIS DCLT PROGRAM WILL PROVIDE THE COVERAGE NECESSARY TO DETECT FAILURES TO THE COMPUTER EQUIPMENT, THE COMMUNICATION LINK, OR THE MODEM.

THIS DIAGNOSTIC HAS BEEN WRITTEN FOR USE WITH THE DIAGNOSTIC RUNTIME SERVICES SOFTWARE (SUPERVISOR). THESE SERVICES PROVIDE THE INTERFACE TO THE OPERATOR AND TO THE SOFTWARE ENVIRONMENT. THIS PROGRAM CAN BE USED WITH XXDP+, ACT, APT, SLIDE AND PAPER TAPE. FOR A COMPLETE DESCRIPTION OF THE RUNTIME SERVICES, REFER TO THE XXDP+ USER'S MANUAL (CHQUS?.SEQ WHERE ? IS REV. LEVEL OF THE MANUAL). THERE IS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES IN SECTION 2 OF THIS DOCUMENT.

1.2 SYSTEM REQUIREMENTS

IN ORDER TO RUN THE DUP DCLT PROGRAM, THE FOLLOWING MINIMUM HARDWARE IS REQUIRED:

- A PDP-11 CPU
- MINIMUM OF 24K WORDS OF MEMORY
- A WORKING CLOCK
- A CONSOLE TERMINAL
- ANY XXDP+ SUPPORTED LOAD MEDIA
- DUP11-DA: M7867 MODULE
  BC05C-25 CABLE
  BC02-1D CABLE
  H325 TEST CONNECTOR

1.3 RELATED DOCUMENTS AND STANDARDS

- XXDP+ USER'S MANUAL (CHQUS?.SEQ WHERE ? IS THE REV. LEVEL OF THE MANUAL - "C" IS THE CURRENT REV.).

1.4 DIAGNOSTIC HIERARCY PREREQUISITES

THE GOAL OF THE DATA COMM. LINK TEST PROGRAM IS TO TEST THE COMMUNICATION LINK AND THEREFORE ASSUMES THAT THE CPU'S, CLOCKS, DUP-11 AND THE DEVICES AT THE OTHER END OF THE LINK HAVE ALREADY BEEN TESTED.

IF A WORKING CLOCK IS NOT FOUND, THE PROGRAM WILL CONTINUE BUT ANY OF THE PROGRAM THAT TIMES THE DEVICE WILL HANG IF THE DEVICE TIMES OUT. ALSO, THE EVENT LOG WILL CONTAIN A ZERO EVENT TIME FOR ALL EVENTS LOGGED.

IT IS NOT THE INTENTION OF A DATA COMM. LINK TEST PROGRAM TO TEST THE DUP-11'S, BUT TO TEST THE COMMUNICATION LINK TO WHICH THEY ARE CONNECTED.

SOME OF THE DIAGNOSTICS THAT COULD BE RUN IF THE DUP-11 LOOKS BAD:

```
DZDPEXX CONFIDENCE TEST
DZDPBXX BASIC TRANSMITTER TESTS
DZDPCXX RECEIVER,MODEM CONTROL AND INTERRUPT TEST
DZDPDXX DATA AND FUNCTION TESTS
DXDPBXX DECX11 MODULE

XX= LATEST REVISION
```

1.5 ASSUMPTIONS - RESTRICTIONS

IT IS ASSUMED THAT THE COMMUNICATIONS DEVICE HAS BEEN TESTED USING THE PREREQUISTE DIAGNOSTICS. THE OPERATOR SHOULD HAVE READ THE USER DOCUMENTATION PORTION OF THE LISTING TO FAMILIARIZE HIMSELF WITH THE COMMANDS AND CAPABILITIES AVAILABLE UNDER THE DIAGNOSTIC SUPERVISOR AND DCLT.

THIS DIAGNOSTIC DOES NOT RUN THE DUP-11 IN BIT STUFF MODE. IT IS ASSUMED THAT IF THE LINK WORKS IN CHAR MODE THE LINK WILL WORK IN BIT STUFF MODE.

THE DUP-11 IS NOT A DMA DEVICE AND THUS MUST RELY ON THE SOFTWARE FOR SERVICE.

2.0 OPERATING INSTRUCTIONS

THIS SECTION CONTAINS A BRIEF DESCRIPTION OF THE RUNTIME SERVICES.
FOR DETAILED INFORMATION, REFER TO THE XXDP+ USER'S MANUAL (CHQUS).

2.1 COMMANDS

THERE ARE ELEVEN LEGAL COMMANDS FOR THE DIAGNOSTIC RUNTIME SERVICES
(SUPERVISOR). THIS SECTION LISTS THE COMMANDS AND GIVES A VERY
BRIEF DESCRIPTION OF THEM. THE XXDP+ USER'S MANUAL HAS MORE DETAILS.

COMMAND	EFFECT
START	START THE DIAGNOSTIC FROM AN INITIAL STATE
RESTART	START THE DIAGNOSTIC WITHOUT INITIALIZING
CONTINUE	CONTINUE AT TEST THAT WAS INTERRUPTED (AFTER ^C)
PROCEED	CONTINUE FROM AN ERROR HALT
EXIT	RETURN TO XXDP+ MONITOR (XXDP+ OPERATION ONLY!)
ADD	ACTIVATE A UNIT FOR TESTING (ALL UNITS ARE CONSIDERED TO BE ACTIVE AT START TIME
DROP	DEACTIVATE A UNIT
PRINT	PRINT STATISTICAL INFORMATION (IF IMPLEMENTED BY THE DIAGNOSTIC - SECTION 4.0)
DISPLAY	TYPE A LIST OF ALL DEVICE INFORMATION
FLAGS	TYPE THE STATE OF ALL FLAGS (SEE SECTION 2.3)
ZFLAGS	CLEAR ALL FLAGS (SEE SECTION 2.3)

A COMMAND CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. SO
YOU MAY, FOR EXAMPLE, TYPE "STA" INSTEAD OF "START".

2.2 SWITCHES

THERE ARE SEVERAL SWITCHES WHICH ARE USED TO MODIFY SUPERVISOR OPERATION.
THESE SWITCHES ARE APPENDED TO THE LEGAL COMMANDS. ALL OF THE LEGAL
SWITCHES ARE TABULATED BELOW WITH A BRIEF DESCRIPTION OF EACH.
IN THE DESCRIPTIONS BELOW, A DECIMAL NUMBER IS DESIGNATED BY "DDDDD".

SWITCH	EFFECT
/TESTS:LIST	EXECUTE ONLY THOSE TESTS SPECIFIED IN THE LIST. LIST IS A STRING OF TEST NUMBERS, FOR EXAMPLE - /TESTS:1:5:7-10. THIS LIST WILL CAUSE TESTS 1,5,7,8,9,10 TO BE RUN. ALL OTHER TESTS WILL NOT BE RUN.
/PASS:DDDDD	EXECUTE DDDDD PASSES (DDDDD = 1 TO 64000)
/FLAGS:FLGS	SET SPECIFIED FLAGS. FLAGS ARE DESCRIBED IN SECTION 2.3.
/EOP:DDDDD	REPORT END OF PASS MESSAGE AFTER EVERY DDDDD PASSES ONLY. (DDDDD = 1 TO 64000)
/UNITS:LIST	TEST/ADD/DROP ONLY THOSE UNITS SPECIFIED IN THE LIST. LIST EXAMPLE - /UNITS:0:5:10-12

USE UNITS 0,5,10,11,12 (UNIT NUMBERS = 0-63)

EXAMPLE OF SWITCH USAGE:

START/TESTS:1-5/PASS:1000/EOP:100

THE EFFECT OF THIS COMMAND WILL BE: 1) TESTS 1 THROUGH 5 WILL BE EXECUTED, 2) ALL UNITS WILL TESTED 1000 TIMES AND 3) THE END OF PASS MESSAGES WILL BE PRINTED AFTER EACH 100 PASSES ONLY. A SWITCH CAN BE RECOGNIZED BY THE FIRST THREE CHARACTERS. YOU MAY, FOR EXAMPLE, TYPE "/TES:1-5" INSTEAD OF "/TESTS:1-5".

BELOW IS A TABLE THAT SPECIFIES WHICH SWITCHES CAN BE USED BY EACH COMMAND.

	TESTS	PASS	FLAGS	EOP	UNITS
START	X	X	X	X	X
RESTART	X	X	X	X	X
CONTINUE		X	X	X	
PROCEED			X		
DROP					X
ADD					X
PRINT					
DISPLAY					X
FLAGS					
ZFLAGS					
EXIT					

2.3 FLAGS

FLAGS ARE USED TO SET UP CERTAIN OPERATIONAL PARAMETERS SUCH AS LOOPING ON ERROR. ALL FLAGS ARE CLEARED AT STARTUP AND REMAIN CLEARED UNTIL EXPLICITLY SET USING THE FLAGS SWITCH. FLAGS ARE ALSO CLEARED AFTER A START COMMAND UNLESS SET USING THE FLAG SWITCH. THE ZFLAGS COMMAND MAY ALSO BE USED TO CLEAR ALL FLAGS. WITH THE EXCEPTION OF THE START AND ZFLAGS COMMANDS, NO COMMANDS AFFECT THE STATE OF THE FLAGS; THEY REMAIN SET OR CLEARED AS SPECIFIED BY THE LAST FLAG SWITCH.

FLAG	EFFECT
HOE	HALT ON ERROR - CONTROL IS RETURNED TO RUNTIME SERVICES COMMAND MODE
LOE	LOOP ON ERROR
IER*	INHIBIT ALL ERROR REPORTS
IBE*	INHIBIT ALL ERROR REPORTS EXCEPT FIRST LEVEL (FIRST LEVEL CONTAINS ERROR TYPE, NUMBER, PC, TEST AND UNIT)
IXE*	INHIBIT EXTENDED ERROR REPORTS (THOSE CALLED BY PRINTX MACRO'S)
PRI	DIRECT MESSAGES TO LINE PRINTER
PNT	PRINT TEST NUMBER AS TEST EXECUTES
BOE	"BELL" ON ERROR
UAM	UNATTENDED MODE (NO MANUAL INTERVENTION)

ISR	INHIBIT STATISTICAL REPORTS (DOES NOT APPLY TO DIAGNOSTICS WHICH DO NOT SUPPORT STATISTICAL REPORTING)
IDR	INHIBIT PROGRAM DROPPING OF UNITS
ADR	EXECUTE AUTODROP CODE
LOT	LOOP ON TEST
EVL	EXECUTE EVALUATION (ON DIAGNOSTICS WHICH HAVE EVALUATION SUPPORT)

*ERROR MESSAGES ARE DESCRIBED IN SECTION 3.1

SEE THE XXDP+ USER'S MANUAL FOR MORE DETAILS ON FLAGS. YOU MAY SPECIFY MORE THAN ONE FLAG WITH THE FLAG SWITCH. FOR EXAMPLE, TO CAUSE THE PROGRAM TO LOOP ON ERROR, INHIBIT ERROR REPORTS AND TYPE A "BELL" ON ERROR, YOU MAY USE THE FOLLOWING STRING:

```
/FLAGS:LOE:IER:BOE
```

2.4 HARDWARE QUESTIONS

WHEN A DIAGNOSTIC IS STARTED, THE RUNTIME SERVICES WILL PROMPT THE USER FOR HARDWARE INFORMATION BY TYPING "CHANGE HW (L) ?" YOU MUST ANSWER "Y" AFTER A START COMMAND UNLESS THE HARDWARE INFORMATION HAS BEEN "PRELOADED" USING THE SETUP UTILITY (SEE CHAPTER 6 OF THE XXDP+ USER'S MANUAL). WHEN YOU ANSWER THIS QUESTION WITH A "Y", THE RUNTIME SERVICES WILL ASK FOR THE NUMBER OF UNITS (IN DECIMAL).

THE DUP-11 DATA COMM. LINK TEST PROGRAM WILL NOT USE MORE THAN ONE UNIT. FOR THE DUP-11 , THE HARDWARE INFORMATION REQUESTED WILL BE:

```
# UNITS (D) ? 1<CR>

UNIT 0
FULL DUPLEX OPERATION :  (L) Y ?
DEVICE CSR ADDRESS : (O)  160170 ?
INTERRUPT VECTOR ADDRESS:  (O)  300  ?
REMOTE NODE "ITEP" :  (L) N ?
IS THIS A MULTIPOINT NETWORK: (L) N ?
```

THE FULL DUPLEX QUESTION SHOULD BE ANSWERED "Y" WHEN USING FULL DUPLEX MODEMS,OR NULL MODEM, OR MODEM ELIMINATORS. ANSWER "N" FOR HALF DUPLEX MODEMS.

REMOTE NODE ITEP SHOULD BE ANSWERED "Y" IF OTHER NODE IS RUNNING SOFTWARE THAT IS USING "ITEP" FORMATS(I.E. PDP-11 RUNNING ITEP).

IF OTHER NODE IS USING ITEP, THE ABOVE "MULTIPOINT NETWORK" QUESTION WILL NOT APPEAR.

IF TO THE "MULTIPOINT NETWORK" QUESTION, YOU RESPOND WITH "Y"
THEN
        ADDRESS THIS STATION: (D) 1 ?

WILL BE DISPLAYED. INPUT THE DECIMAL TRIBUTARY ADDRESS (1-255)
OF THIS DUP-11.

2.5 DATA COMM. LINK TEST COMMANDS

THE "DCLT>" COMMAND LEVEL FOLLOWS THE ANSWERING OF THE HARDWARE P-TABLE QUESTIONS. THESE COMMANDS CAN BE TYPED WHEN THE "DCLT> (A) ?" PROMPT IS PRINTED.

MESSAGE COMMANDS AVAILABLE:

YOU ONLY HAVE TO TYPE ENOUGH CHARACTERS TO UNIQUELY SPECIFY A COMMAND.

THE COMMAND LINE IS INTERPRETED FROM LEFT TO RIGHT. THEREFORE, IF A QUALIFIER ON THE COMMAND LINE IS RELATED OR EFFECTS A QUALIFIER TO THE LEFT ON THE COMMAND LINE, THE QUALIFIER FARTHEREST TO THE RIGHT TAKES PRECEDENCE SINCE IT IS INTERPRETED LAST. (I.E. IF /CHECK..... .../NOCHECK APPEAR ON THE SAME LINE, NOCHECK WILL BE INDICATED IN THE PARAMETERS WORD.)

REFER TO SECTION 6.0 FOR A DESCRIPTION OF THE DIFFERENT MODES OF OPERATION AND THE TYPES OF MESSAGES AVAILABLE.

2.5.1 MESSAGE COMMANDS

COMMAND	DESCRIPTION
CLEAR EXPECTLIST	ZEROES THE EXPECTLIST (00'S) AND THEN PUTS DEFAULT ITEP MSG IN SO NOT REALLY EMPTY
CLEAR TRANSMITLIST	FILLS TRANSMITLIST (000'S) AND THEN PUTS DEFAULT ITEP MSG IN SO NOT REALLY EMPTY

```
SET     EXPECTMSG=TYPE/QUAL             DEFINE A MESSAGE TO BE PUT ON
                                           THE EXPECTED LIST

        WHERE:  "TYPE" IS:
                =ONES
                =ZEROES
                =1ALT
                =0ALT
                =ITEP
                =CCITT
                =ALPHA
                ="A-Z,0-9,SPACES OR TABS IN QUOTES"


        WHERE THE OPTIONAL "QUAL" IS:

                        /SIZE=NNN       MAKE THE MESSAGE "NNN" BYTES
                                           LONG. (DEFAULT VALUE IS
                                           SIZE OF MESSAGE SPEC'D BY
                                           OPERATOR OR DEFAULTS.)
                        /COPY=NN        COPY THIS MESSAGE INTO THE
                                           BUFFER "NN" TIMES (DEFAULT
                                           IS 0 = PUT THE MESSAGE IN
                                           ONLY ONCE)

        NOTE: SET'S ADD MESSAGES TO THE LIST IN THE ORDER THEY'RE
              DEFINED. "NNN" IS A DECIMAL NUMBER.  THE FIRST SET
              OVERWRITES THE DEFAULT ITEP MESSAGE PLACED THERE BY
              INITIALIZATION OR A "CLEAR" COMMAND.

              SEE SECTION 6.2 FOR A DESCRIPTION OF THE PRE-DEFINED
              MESSAGES THAT ARE AVAILABLE. (ZEROS,ONES ...)

SET     TRANSMITMSG=TYPE/QUAL           DEFINE A MESSAGE TO BE PUT ON
                                           THE TRANSMIT LIST
                                           (SEE DESCRIPT FOR SET EXP)

SET     EXPECT=TRANSMIT                 MAKES A COPY OF THE TRANSMIT
                                           LIST IN THE EXPECT LIST.

SHOW    EXPECTLIST                      LISTS THE MESSAGE SIZE AND TYPE
                                           FOR THE MESSAGES IN THE
                                           EXPECT LIST

SHOW    TRANSMITLIST                    LISTS THE MESSAGE SIZE AND TYPE
                                           FOR THE MESSAGES IN THE
                                           TRANSMIT LIST
```

2.5.2 STATISTICAL COMMANDS

COMMAND		DESCRIPTION
PRINT		TAKES THE OPERATOR TO THE REPORT LEVEL 'RPT>'. FROM HERE YOU CAN EXAMINE THE EVENT LOG OR IF "/PROTOCOL" IS SELECTED, THE DDCMP STATISTICAL AND ERROR COUNTERS.
DUMP	SSSSSS-EEEEEE/B	PRINTS THE CONTENTS OF THE MEMORY LOCATIONS BETWEEN OCTAL ADDRESSES "SSSSSS" AND "EEEEEE" WHERE "SSSSSS" IS THE START ADDRESS AND "-EEEEE" IS THE END ADDRESS.
	WHERE "/B" IS OPTIONAL: DEFAULT IS PRINT WORDS "/B" CAUSES PRINT BYTES	IF "-EEEEEE" IS NOT SPECIFIED THEN THE CONTENTS OF "SSSSSS" IS PRINTED IN WORD FORMAT. IS PRINTED IN WORD FORMAT.

NOTE: THE DUMP COMMAND IS USEFUL FOR EXAMINING MESSAGE DATA. STARTING ADDRESSES CAN BE FOUND BY LOOKING IN THE EVENT LOG.

2.5.3 RUN COMMAND

COMMAND	DESCRIPTION
RUN MODE=MTYPE/QUAL	STARTS DCLT EXECUTING IN THE MODE SPECIFIED

NOTE: MODE=ACTIVE IS NOT DEFAULT, A MODE=MTYPE MUST BE TYPED EACH TIME A RUN IS TYPED

WHERE THE "MTYPE" IS ANY ONE OF THE FOLLOWING:

=ACTIVE	(FORCES /NOECHO ,NO LOOPING)
=PASSIVE	(FORCES NO LOOPING)
=RECEIVE	(FORCES /NOECHO ,NO LOOPING)
=LISTEN	(FORCES /NOECHO ,NO LOOPING, /NOCHECK)
=TRANSMIT	(FORCES /NOECHO ,NO LOOPING, /NOCHECK)
=TALK	(FORCES /NOECHO ,NO LOOPING, /NOCHECK)
=DOWNLINELOAD	(DOWN-LINE-LOADING IS NOT SUPPORTED FOR DUP-11 TO DUP-11 LINKS).
	(FORCING NO LOOPING MEANS IT MUST BE SPECIFIED AS A QUALIFIER ANY TIME ITS DESIRED, THERE IS NO DEFAULT)

AND OPTIONAL "QUAL" IS ANY COMBINATION OF THE FOLLOWING:

/CHECK/NOCHECK	ENABLES/DISABLES CHECKING OF RECEIVED DATA AGAINST THE EXPECTED DATA

NOTE: IF BOTH NODES IN ACTIVE AND "/NOCHECK" IS USED, END-OF-PASS IS DEFINED AS RECEIVING 1 MESSAGE AND COMPLETING THE TRANSMIT LIST. WITH NO DATA CHECKING, THERE IS NO WAY FOR DCLT TO KNOW HOW MANY MESSAGES IT SHOULD EXPECT TO RECEIVE.

/STATUS/NOSTATUS	ENABLES/DISABLES PRINTING OF PROGRAM STATUS MESSAGES TO THE OPERATOR
/ECHO/NOECHO	ENABLES/DISABLES THE RETRANSMISSION OF THE DATA RECEIVED IN PASSIVE MODE. (IGNORED IN MODES OTHER THAN PASSIVE)
/MODEM/NOMODEM/	ENABLES/DISABLES THE REPORTING OF MODEM STATUS INTERRUPT CHANGES.
/LOOP=LTYPE	SPECIFIES WHICH, IF ANY, TYPE OF MAINTENANCE LOOPBACK IS BEING USED. (IGNORED IN MODES OTHER THAN ACTIVE) MUST BE SPECIFIED EACH TIME ELSE NO

LOOP IS USED.

''LTYPE'' IS:

=INTERNALTTL LOOPS DATA INTERNAL TO USYNRT

=CABLE USE THIS FOR TESTING WITH H325
TURNARROUND CONNECTOR ON END OF CABLE.

NOTE: THIS SKIPS OVER THE CHECK
FOR MODEM READY WHEN DTR IS SET.

=LOCALMODEM NOT SUPPORTED BY DUP-11
=REMOTEMODEM '' ''

/PASS=NN SPECIFIES NUMBER OF ITERATIONS TO MAKE BEFORE
END-OF-PASS. DEFAULT VALUE OF 1
WILL BE USED ON ANY RUN THAT A /PASS=N
IS NOT ADDED TO THE 'RUN ...'' COMMAND.
IF A ''-1'' IS TYPED, THEN THE PROGRAM
RUN UNTIL A ^C IS TYPED.

/PROTOCOL ENABLES SUBSET OF DDCMP PROTOCOL- THE DUP-11
CAN NOW COMMUNICATE WITH OTHER 'INTELLIGENT'
SYNCHRONOUS DEVICES THAT SUPPORT DDCMP IN
THEIR MICROCODE. (DMR,DMC,DMV OR DMP).

THIS SWITCH IS NOT SUPPORTED BY ALL DCLT'S.

/NOPROTOCOL DISABLES PROTOCOL- THE DUP-11 CAN COMMUNICATE
ONLY WITH ANOTHER DUP-11 OR DPV-11 RUNNING
DCLT OR ITEP.

NOTE: SEE SECTION 6.1 FOR A DESCRIPTION
----- OF THE ''RUN MODES'' AND ''LOOP MODES''

2.5.4 DEFAULTS

IF NO "SET'S" THEN THE DEFAULT IS SAME AS IF TYPED:

```
SET TRANSMITMSG=ITEP/SIZE=58/COPY=0
SET EXPECTMSG=ITEP/SIZE=58/COPY=0
```

THE DEFAULT COPY AND SIZE FOR EACH OF THE MESSAGE TYPES:

```
ONES - /SIZE=64/COPY=0
ZEROES - /SIZE=64/COPY=0
0ALT - /SIZE=64/COPY=0
1ALT - /SIZE=64/COPY=0
CCITT - /SIZE=64/COPY=0
ALPHA - /SIZE=65/COPY=0
ITEP - /SIZE=58/COPY=0
OPER. SPEC'D - /SIZE=LENGTH-OF-TEXT-TYPED-BETWEEN-QUOTES/COPY=0
```

FOR THE RUN COMMAND THE DEFAULTS ARE:

```
RUN MODE=ACTIVE/NOSTATUS/CHECK/NOECHO/NOMODEM/PASS=1/NOPROTOCOL
```

NOTE: MODE=ACTIVE IS NOT A DEFAULT, A MODE=MTYPE MUST BE TYPED
----- EACH TIME A RUN IS TYPED

IF THE DCLT PROGRAM IS RUN IN UNATTENDED MODE (UAM FLAG=1 OR CHAINED),
THE DEFAULTS ARE AS IF THESE SETUP AND RUN COMMANDS WERE TYPED:

```
SET TRANS=ITEP
SET EXPECT=ITEP
RUN MODE=ACTIVE/LOOP=INTERNAL/NOSTAT/NOECHO/NOMODEM/CHECK
        /PASS=1/NOPROTOCOL
```

OTHER NOTES:
---

^C	ALWAYS RETURNS YOU TO "DR>" (THE SUPERVISOR)
<CR>	IS SEEN AS A COMMAND TERMINATOR
"RUBOUT"	DELETE LAST CHAR. TYPED IN COMMAND STRING

2.5.5 PRINT COMMAND

THE PRINT COMMAND TAKES YOU TO THE REPORT LEVEL 'RPT>'.
THE COMMANDS AVAILABLE IN RPT> ARE ...

COMMAND	DESCRIPTION
HELP OR ?	PRINTS HELP INFORMATION FOR RPT>
EXIT	RETURNS YOU TO THE LEVEL THAT YOU ENTERED FROM. (DCLT> OR DR>)
LOG	PRINTS THE DCLT EVENT LOG
COUNTERS/FULL	PRINTS THE ENTIRE DDCMP STATISTICAL AND ERROR LOG. SEE SECTION 4.3
COUNTERS/ERRORS	PRINTS ONLY THE DDCMP ERROR LOCATIONS OF THE LOG.
COUNTERS/OFFSET=NN	PRINTS A SINGLE LOCATION OF THE LOG AS SPECIFIED BY THE OCTAL WORD OFFSET VALUE(NN). NOTE:: THE DDCMP COUNTERS WILL BE VALID ONLY WITH PROTOCOL ENABLED(/PROTOCOL).

2.5.6 MISC COMMANDS

COMMANDS	DESCRIPTION
EXIT	FROM THE DCLT> LEVEL RETURNS YOU TO DR>
HELP OR ?	PRINTS HELP INFORMATION

2.6 QUICK START-UP PROCEDURE (XXDP+)

TO START-UP THIS PROGRAM:

1. BOOT XXDP+
2. GIVE THE DATE AND ANSWER THE LSI AND 50HZ (IF THERE IS A CLOCK) QUESTIONS
3. TYPE "R NAME", WHERE NAME IS THE NAME OF THE BIN OR BIC FILE FOR THIS PROGRAM
4. TYPE "START"

5. ANSWER THE "CHANGE HW" QUESTION WITH "Y"

6. ANSWER ALL THE HARDWARE QUESTIONS. THE NUMBER OF UNITS THAT DCLT CAN USE IS ALWAYS "1".

WHEN YOU FOLLOW THIS PROCEDURE YOU WILL BE USING ONLY THE DEFAULTS FOR FLAGS. THESE DEFAULTS ARE DESCRIBED IN SECTION 2.3.

7. AFTER THE "DCLT> (A) ?" PROMPT, TYPE "RUN MODE=ACTIVE<CR>"

WHEN YOU FOLLOW THIS PROCEDURE YOU WILL BE USING THE DEFAULT TRANSMIT AND EXPECTED MESSAGES. THE DEFAULT PASS COUNT AND "RUN" QUALIFIERS ARE ALSO BEING USED. THESE DEFAULTS ARE DESCRIBED IN SECTION 2.5.3.

3.0 ERROR INFORMATION

3.1 TYPES OF ERROR MESSAGES

THERE ARE THREE LEVELS OF ERROR MESSAGES THAT MAY BE ISSUED BY A DIAGNOSTIC: GENERAL, BASIC AND EXTENDED. GENERAL ERROR MESSAGES ARE ALWAYS PRINTED UNLESS THE "IER" FLAG IS SET (SECTION 2.3). THE GENERAL ERROR MESSAGE IS OF THE FORM:

```
        NAME  TYPE  NUMBER  ON UNIT NUMBER  TST NUMBER PC:XXXXXX
        ERROR MESSAGE
```

,WHERE: NAME = DIAGNOSTIC NAME
TYPE = ERROR TYPE (SYS FATAL, DEV FATAL, HARD OR SOFT)
NUMBER = ERROR NUMBER
UNIT NUMBER = 0 - N (N IS LAST UNIT IN PTABLE)
TST NUMBER = TEST AND SUBTEST WHERE ERROR OCCURRED
PC:XXXXXX = ADDRESS OF ERROR MESSAGE CALL

BASIC ERROR MESSAGES ARE MESSAGES THAT CONTAIN SOME ADDITIONAL INFORMATION ABOUT THE ERROR. THESE ARE ALWAYS PRINTED UNLESS THE "IER" OR "IBE" FLAGS ARE SET (SECTION 2.3). THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL MESSAGE.

EXTENDED ERROR MESSAGES CONTAIN SUPPLEMENTARY ERROR INFORMATION SUCH AS REGISTER CONTENTS OR GOOD/BAD DATA. THESE ARE ALWAYS PRINTED UNLESS THE "IER", "IBE" OR "IXE" FLAGS ARE SET (SECTION 2.3). THESE MESSAGES ARE PRINTED AFTER THE ASSOCIATED GENERAL ERROR MESSAGE AND ANY ASSOCIATED BASIC ERROR MESSAGES.

3.2 SPECIFIC ERROR MESSAGES

3.2.1 COMMAND LINE INTERPRETER ERRORS

ERROR MESSAGE:	MEANING
?ILL CMD-BAD SYNTX?	A COMMAND WITH AN ILLEGAL CHAR WAS TYPED - RETYPE THE COMMAND. THE VALID COMMANDS AND THEIR SYNTAX ARE SHOWN IN SECTION 2.5.
?INCMPLTE CMD?	A REQUIRD PART OF A COMMAND WAS LEFT OUT.
?NUM TOO BIG?	THE VALUE OF A NUMERIC STRING IN THE COMMAND LINE WAS LARGER THAN 65535 OR 177777 OCTAL. (> 16 BITS).
?BAD RADIX?	A "8" OR "9" WAS TYPED WHEN AN OCTAL STRING WAS EXPECTED. PROBABLY OCCURRED WHEN TYPING A "DUMP" COMMAND WHERE

OCTAL ADDRESSES ARE EXPECTED.

?"LOOP" VALID ONLY IN ACTIVE? THE "/LOOP=.." SWITCH WAS TYPED IN A RUN COMMAND BUT THE MODE WAS NOT SET TO ACTIVE. MAINTENANCE LOOP IS ONLY POSSIBLE IF THE MODE OF OPERATION IS ACTIVE.

?"ECHO" VALID ONLY IN PASSIVE? THE "/ECHO" SWITCH WAS TYPED IN A RUN COMMAND BUT THE MODE WAS NOT SET TO PASSIVE. ECHOING OF RECEIVED DATA IS ONLY POSSIBLE IF THE MODE OF OPERATION IS PASSIVE.

?ILL CHR- "A-Z,0-9,SP,TAB" ONLY? A CHARACTER TYPED WITHIN QUOTES WHEN TRYING TO DEFINE THE CONTENTS OF A TRANSMIT OR EXPECT MESSAGE WAS NOT A "A-Z,0-9,SPACE OR TAB". RETYPE THE COMMAND WITH ONLY THESE CHARACTERS BETWEEN QUOTES.

?"SIZE=0" NOT VALID? A MESSAGE ZERO BYTES LONG CAN NOT BE BUILT. RETYPE THE COMMAND WITH A "/SIZE=NNN". IF NO "/SIZE=" IS TYPED A DEFAULT SIZE WILL BE USED.

?TRANSMIT AND EXPECT LIST MUST BE IDENTICAL FOR LOOP?

IF RUN COMMAND WITH "/LOOP/CH" IS TYPED THE TRANSMIT LIST AND EXPECT LIST MUST BE EQUAL. IF THEY ARE NOT THIS ERROR WILL BE DISPLAYED. USE 'SE E=T' COMMAND.

3.2.2 DCLT OR DEVICE ERROR MESSAGES:

CLOCK NOT FOUND THIS MEANS THAT NO CLOCK WAS FOUND ON THE SYSTEM THE DIAG-NOSTIC WILL STILL RUN BUT NONE OF THE TIME OUT CONDITIONS WILL OCCUR

BAD CLOCK - PROGRAM WILL HANG ON "TIMEOUT"!!
THIS MEANS THAT THE CLOCK FOUND ON THE SYSTEM DID NOT INTERRUPT WHEN ASKED TO DO A "TICK".

THE PROGRAM WILL STILL RUN, BUT ANY OF THE PROGRAM THAT TIMES THE DEVICE WILL HANG IF THE DEVICE TIMES OUT. ALSO, THE EVENT LOG WILL CONTAIN A ZERO EVENT TIME FOR ALL EVENTS LOGGED.

MAX. CHAR. MSG COUNT EXCEEDED - MSG. NOT BUILT !!

THIS MEANS THAT THE TRANSMIT OR EXPECT BUFFER IS FULL. NO MORE MESSAGES CAN BE ADDED TO THAT BUFFER.

BUFFER FULL - MSG. NOT BUILT !!

THIS MEANS THAT THE LAST MESSAGE YOU TRIED TO ADD TO EITHER THE TRANSMIT OR EXPECT BUFFER CAUSED THE TOTAL NUMBER OF MESSAGES TO BE EXCEEDED. NO MORE MESSAGES CAN BE ADDED TO THAT BUFFER. THE LIMIT IS DETERMINED BY THE SIZE OF THE MESSAGE POINTER TABLE.

CHAR. COUNT EXCEEDS BUFF LIMIT - MSG TRUNCATED

THIS MEANS THAT THE LAST MESSAGE YOU TRIED TO ADD TO THE TRANSMIT OR EXPECT BUFFER CAUSED THE TOTAL CHAR. COUNT FOR THAT BUFFER TO EXCEED THE LIMIT. THE MESSAGE WAS TRUNCATED TO COMPLETELY FILL THE BUFFER. NO MORE MESSAGES CAN BE ADDED TO THAT BUFFER.

3.2.3 DEVICE ERROR MESSAGE

DATA COMPARISON DATA ERROR
BYTE # IN MSG=XXX EXPTD=YYY RECVD=ZZZ

XXX= OFFSET OF THAT BYTE FROM THE START OF THE COMPARE OR EXPECT MESSAGE.
YYY= THE CONTENTS OF THAT BYTE IN THE EXPECTED MESSAGE
ZZZ= THE CONTENTS OF THAT BYTE IN THE RECEIVED MESSAGE

UP TO FIVE OF THESE ERRORS WILL BE PRINTED PER MESSAGE COMPARED. ONLY THE FIRST FIVE MISMATCHES WILL BE INDIVIDUALLY REPORTED, BUT TOTAL NUMBER OF MISTMATCHES IS REPORTED BY ANOTHER ERROR.

PRINTING THE EVENT LOG AND USING THE DCLT "DUMP" COMMAND WILL ALLOW YOU TO FIND THE ADDRESS OF THE MESSAGE AND EXAMINE IT.

DATA COMPARISON DATA ERROR
TOTAL MISMATCHES IN MSG = NNN

THIS MEANS THAT WHEN THE MESSAGE
RECEIVED WAS COMPARED AGAINST THE
MESSAGE THAT WAS EXPECTED, SOME OF
THE CHARS. WERE NOT THE SAME.

DATA COMPARISON LENGTH ERROR
COMPARE COUNT= XXX RECEIVE COUNT= ZZZ

XXX= NUMBER OF BYTES IN THE COMPARE
MESSAGE
ZZZ= NUMBER OF BYTES IN THE RECEIVED
MESSAGE
THIS MEANS THAT THE MESSAGE RECEIVED
WAS A DIFFENT LENGTH THEN THE MESSAGE
THAT WAS EXPECTED.

MODEM STATUS CHANGES FOR THIS PASS WERE..
HARD CHANGES=XXXXX GLITCHES=XXXXX

WHERE XXXXX IS A 5 DIGIT DECIMAL NUMBER
THIS MSG IS ONLY PRINTED IF NUMBER OF
EITHER HARD CHANGES OR GLITCHES IS
GREATER THAN 0. A HARD CHANGE IS ONE
WHERE THE DUP WAS ABLE TO LATCH UP A
DIFFERENCE IN THE MODEM STATUS. A
GLITCH IS WHEN A MODEM STATUS INTERRUPT
OCCURS BUT THE DUP CANNOT FIND A
DIFFERENCE IN STATUS BIT.

****
* NOTE * - IN THE FOLLOWING ERROR DESCRIPTIONS XXXXX
******** REFERS TO THE OCTAL CONTENTS OF THE DEVICE REGISTERS
SPECIFIED.

MASTER RESET DID NOT WORK		THIS MEANS THAT AFTER A MASTER
RXCSR	TXCSR	RESET WAS ISSUED TO DUP THE
XXXXXX	XXXXXXX	RXCSR REGISTER WAS NON ZERO.
NO CLEAR TO SEND FROM MODEM		WHEN REQUEST TO SEND (RTS)
RXCSR	TXCSR	IS SET, MODEM DOES NOT RESPOND
XXXXXXX	XXXXXXX	WITH CLEAR TO SEND(CTS).
TIME OUT WAITING FOR RX OR TX TO COMPLETE		
RXCSR	TXCSR	THIS USUALLY MEANS AN OPEN
XXXXXXX	XXXXXXX	COMMUNICATION LINK.
MODEM DID NOT RETURN MODEM READY		
RXCSR	TXCSR	WHEN THE DTR SIGNAL WAS SET,
XXXXXXX	XXXXXXX	DATA SET READY WAS NOT RETURNED
CRC IN ERROR		A CRC ERROR WAS DETECTED BY
RXDBUF	RXCSR	THE DUP ON AN INCOMING MESSAGE.

```
                    XXXXXX          XXXXXX


                    RECEIVER OVERRUN                        THE RECEIVER WASN'T SERVICED
                    RXDBUF          RXCSR                   FAST ENOUGHT (SOFTWARE)--
                    XXXXXXX         XXXXXXX                 CAUSING A CHARACTER TO BE LOST.

                    TIMED OUT IN START,STACK ACK SEQ        THIS USUALLY MEANS THAT THE DUP
                    RDATA           SDATA                   IS UNABLE TO ESTABLISH A
                    XXXXXXX         XXXXXXX                 CONNECTION WITH THE OTHER
                                                            DEVICE BEING TESTED.THE VALUES
                                                            IN RDATA AND SDATA SHOW THE
                                                            RECIEVED(RDATA) AND TRANSMITTED
                                                            (SDATA). SEE DDCMP SPEC. FOR
                                                            FURTHER EXPLANATION OF STARTUP
                                                            SEQUENCE.
```

4.0 PERFORMANCE AND PROGRESS REPORTS

DCLT USES IT'S OWN METHOD FOR DETERMINING AN "END OF PASS"
WHICH IS CALLED A "DCLT END OF PASS". THE NUMBER OF "DCLT PASSES"
TO BE RUN IS SPECIFIED BY THE "/PASS=XXX" SWITCH ON THE DCLT
RUN COMMAND. THE TOTAL NUMBER OF "DCLT ERRORS" IS REPORTED
WHEN " X NUMBER OF DCLT PASSES" ARE COMPLETED.

4.1 PRINTING OF EVENT LOG

SIGNIFICANT EVENTS OR CHECK-POINTS WILL BE LOGGED IN A
"CIRCULAR QUEUE" STORAGE AREA CALLED THE EVENT LOG. THE LAST
"N" EVENTS ARE KEPT LOGGED AND CAN BE LISTED ON THE OPERATORS
CONSOLE BY GIVING A "PRINT" COMMAND AT THE "DR>"(DIAGNOSTIC SUPERVISOR)
OR "DCLT>" (DCLT) LEVEL. THIS WILL TAKE YOU TO THE RPT> LEVEL. NOW
INPUT THE "LOG" COMMAND. THE EVENTS ARE PRINTED IN A "LAST-IN
FIRST-OUT" ORDER.

EVENT TIME IS TYPED OUT AS MMM:SS:TT (LIKE 254:36:07) WHERE MMM,SS,TT
REPRESENT THE NUMBER OF MINUTES, SECONDS, CLOCK TICKS SINCE THE LAST
START OR RESTART. IT SHOULD BE NOTED THAT THE TIMES ARE
RELATIVE SINCE WHILE THE PROCESSOR IS RUNNING AT PRIORITY 7
THE CLOCK CAN'T INTERRUPT TO KEEP TIME. THIS IS THE CASE
WHILE THE PROGRAM IS FETCHING DCLT COMMANDS FROM THE OPERATOR.
IT SHOULD ALSO BE NOTED THAT THERE ARE ONLY 8 BITS AVALIABLE TO STORE
RELATIVE MINUTES SO "TIME" WILL WRAP TO 000:00:00 AFTER 256:59:59.

A START OR RESTART COMMAND AT THE "DR>" LEVEL INITIALIZES THE EVENT
LOG. THEREFORE IT IS WISE TO DO A "PRINT" AT THE "DR>" LEVEL
BEFORE GIVING A "START" OR "RESTART".

THE TYPES OF EVENTS KEPT IN THE EVENT LOG ARE:

TRANSMIT MESSAGE QUEUED:
        EVENT TIME, ADDRESS OF 1ST BYTE OF MESSAGE,
        TOTAL NO. OF BYTES, MODEM STATUS AT THAT TIME.

```
TRANSMIT MESSAGE COMPLETED:
        EVENT TIME, ADDRESS OF 1ST BYTE OF MESSAGE,
        TOTAL NO. OF BYTES, MODEM STATUS AT THAT TIME.

RECEIVE SPACE QUEUED:
        EVENT TIME, ADDRESS OF 1ST BYTE OF MESSAGE,
        TOTAL NO. OF BYTES, MODEM STATUS AT THAT TIME.

RECEIVE MESSAGE COMPLETED:
        EVENT TIME, ADDRESS OF 1ST BYTE OF MESSAGE,
        TOTAL NO. OF BYTES, MODEM STATUS AT THAT TIME.

DATA COMPARISON STARTED:
        EVENT TIME, ADDRESS OF 1ST BYTE OF RECEIVED MSG.,
        TOTAL NO. OF BYTES IN RCV. MSG., TOTAL NO. OF BYTES
        IN EXPECT MSG.

DATA COMPARISON DATA ERROR:
        EVENT TIME, ADDRESS OF 1ST BYTE OF RECEIVED MSG.,
        TOTAL NO. OF BYTES IN RCV. MSG., TOTAL NO. OF
        COMPARISON FAILURES

DATA COMPARISON LENGTH ERROR:
        EVENT TIME, ADDRESS OF 1ST BYTE OF RECEIVED MSG.,
        TOTAL NO. OF BYTES IN RCV. MSG., TOTAL NO. OF BYTES
        IN EXPECT MSG.

DEVICE INIT AND SETUP:
        EVENT TIME, MODE OF OPERATION, TYPE OF MAINTENANCE
        LOOP, "DCLT" PASS COUNT, "RUN" PARAMETERS

DEVICE ERROR:
        EVENT TIME, DEVICE ERROR MESSAGE, CONTENTS OF TWO
        REGISTERS RELATING TO THE ERROR.

END OF PASS:
^C ABORT:
        EVENT TIME, "DCLT" PASS COUNT, "DCLT" ERROR COUNT,
        AND THE "STRT-TO"(COUNT OF START TIME OUTS).
```

4.2 OPERATOR STATUS MESSAGES

THE "/STATUS, /NOSTATUS" QUALIFIERS FOR THE DCLT "RUN" COMMAND ENABLES/DISABLES THE PRINTING OF PROGRAM STATUS MESSAGES TO THE OPERATOR. THESE MESSAGES ARE INTENDED TO TELL THE OPERATOR WHAT THE DCLT PROGRAM IS CURRENTLY DOING. BELOW ARE THE MESSAGES THAT MIGHT BE PRINTED AND THEIR MEANING:

MESSAGE	MEANING
TXQ	DEVICE IS ABOUT START TRANSMITING A MESSAGE
TXC	TRANSMISSION OF MESSAGE COMPLETED
RXQ	DEVICE HAS QUEUED SPACE TO RECEIVE/ COMPLETED RECEIVE
ERR	DEVICE ERROR HAS OCCURRED
INI	DEVICE ABOUT TO BE INITIALIZED
MSC	ABNORMAL MODEM STATUS CHANGE
CMP	ABOUT TO DO DATA CHECKING OF RECVD VS. EXPTD DATA
CML	LENGTH ERROR OCCURRED DURING DATA COMPARISON
CMD	DATA ERROR OCCURRED DURING DATA COMPARISON
EOP	END OF PASS

NOTE:: BECAUSE THE DUP IS AN INTERRUPT DRIVEN DEVICE, IT IS BEST TO DISABLE STATUS TO PREVENT OVERRUN ERRORS.

4.3 PRINTING DDCMP STATISTICAL AND ERROR LOG

IF YOU ARE RUNNING THIS PROGRAM WITH DDCMP PROTOCOL ENABLED,YOU CAN EXAMINE(VIA 'RPT>" COMMAND)DDCMP STATISTICAL AND ERROR COUNTERS TO GET A BETTER UNDERSTANDING OF WHAT IS HAPPENING ON THE LINK. FOR A FULL DESCRIPTION OF THESE COUNTERS SEE (DIGITAL DATA COMMUNICATION MESSAGE PROTOCOL) SPECIFICATION VERSION 4.1.

BELOW IS A BRIEF DESCRIPTION OF EACH COUNTER. THE MOST IMPORTANT OF THESE ARE DATA MESSAGES SENT/RECEIVED AND DATA ERRORS IN/OUT.

OCTAL #	MESSAGE	MEANING
000000	STATUS FLAGS	USED ONLY IN SOFTWARE DEVELOPMENT.
000000	DATA MSGS TX	# MESSAGES TX'ED DURING THE TEST. RESET TO ZERO AT START OR RESTART. LATCHES AT -1.
000000	DATA MSGS RX	# MESSAGES RX'ED DURING THE TEST.RESET TO ZERO AT START OR RESTART. LATCHES AT -1.
000	HIGHEST MSG TX	MODULO 255 COUNTER. HIGHEST MESSAGE # SENT AND ACK'ED BY REMOTE STATION.
000	HIGHEST MSG ACK	MODULO 255 COUNTER. HIGHEST MESSAGE # RX'D BY REMOTE NODE.(WITH NO ERRORS)
000	NEXT MSG # TO TX	MODULO 255 COUNTER. ALWAYS 1 GREATER THEN CURRENT MESSAGE NUMBER BEING SENT.
000	LAST MSG # TX'ED	MODULO 255 COUNTER. ALWAYS SAME AS HIGHEST # SENT.
000	HIGHEST MSG# RX	NUMBER OF LAST MESSAGE RX'ED AND ACK'ED.
000	TRIB ADDR	IF MULTIPOINT THEN ADDRESS THIS STATION.
000	REMOTE TIME OUTS	MODULO 255 COUNTER. REPLYS RECEIVED AND ACK'ED.
000	GLOBAL CRC ERRORS	IF MULTIPOINT NETWORK-CRC ERRORS DETECTED.
000	NAK REASON	REASON FOR SENDING LAST NAK.
000	SEL THRESH ERRS	HALF/DUPLEX ONLY. SELECT TIME OUTS.
000	RX THRESH ERRS	INCREMENTED WHEN ERROR DETECTED IN INCOMING MESSAGE.(MODULO 8 COUNTER) RESET WHEN GOOD MESSAGE RECEIVED.
000	TX THRESH ERRS	INCREMENTED WHEN NAK RECEIVED. RESET WHEN ACK RECEIVED.(MODULO 8 COUNTER)

000	DATA ERRORS OUT	NAKS RECEIVED BECAUSE OF HEADER CRC ERROR OR DATA CRC ERRORS OR MESSAGE NOT RECEIVED AT ALL(REP). INDICATES NOISE ON TRANSMIT LINE.
000	DATA ERRORS IN	NAKS SENT BECAUSE HEADER CRC ERROR OR DATA CRC ERROR DETECTED IN INCOMING MESSAGE. MESSAGE TAKING NOISE HITS.
000	LOCAL BUFFER ERRS	EITHER NO BUFFER WAS AVAILABLE FOR INCOMING MESSAGE OR BUFFER THAT WAS AVAILABLE WAS TOO SMALL FOR INCOMING MESSAGE. USUALLY A SOFTWARE SPEED PROBLEM.
000	REMOTE BUFFER ERRS	SAME AS LOCAL BUT BUFFER PROBLEMS AT REMOTE STATION.
000	REMOTE STA ERRS	RX OVERRUN ERRORS(RX WASN'T SERVICED FAST ENOUGH) OR IF FORMAT ERROR A CRC EXISTED AND WASN'T DETECTED BY HARDWARE.
000	LOCAL STA ERRS	SAME AS REMOTE STATION ERRORS.
000	TX / RX THRESH ERR	OVERFLOW FROM RX OR TX THRESHOLD COUNTERS. INDICATES A PERSISTENT LINK PROBLEM THAT ISN'T CORRECTED AFTER 7 RETRIES.

5.0 DEVICE INFORMATION TABLES

THIS IS THE DEFAULT HARDWARE P-TABLE. THE VALUES AND
SIZE ARE USED AS A "TEMPLATE" FOR CREATING ACTUAL P-TABLE
ENTRIES AND THE DEFAULT VALUES PROVIDED FOR THE OPERATOR.
SEE SECTION 2.4 FOR AN EXAMPLE OF THE HARDWARE QUESTIONS.

THE NUMBERS IN BRACKETS (I.E. [10]) INDICATES THE OFFSET OF THE
WORD INTO THE HARDWARE P-TABLE. THE OFFSETS MUST MATCH THE P-TABLE
OFFSETS USED IN THE HARDWARE PARAMETER CODING SECTION WHERE THE
"GET PARAMETER" CALLS ARE USED TO FILL THE P-TABLE.

```
.WORD   1               ;[0] FULL OR HALF DUPLEX FLAG (BIT0=1 IF FULL)
.WORD   160170          ;[2] CSR ADDRESS
.WORD   300             ;[4] INTERRUPT VECTOR
.WORD   240             ;[6] INTERRUPT PRIORITY
.WORD   0               ;[10] PT-PT=0   MULTIPOINT=1
.WORD   1               ;[12] TRIB ADDRESS THIS STATION
.WORD   0               ;[14] REMOTE NODE "ITEP"
```

6.0 MODE AND MESSAGE DESCRIPTIONS

6.1 MODE DESCRIPTIONS

THE FOLLOWING MODE DESCRIPTIONS REFER TO MESSAGE LISTS BEING
TRANSMITTED AND RECIEVED BUT BE AWARE THAT OTHER DATA IS ALSO
SENT AND RECEIVED. IF "/PROTOCOL" IS SELECTED THE DATA IS
ENCLOSED IN A DDCMP ENVELOPE AND CONTROL MESSAGE WILL ALSO
APPEAR ON THE LINK.

6.1.1 TRANSMIT MODE

A LIST OF MESSAGES IS TRANSMITTED WITHOUT EXPECTING ANY DATA
TO BE RECEIVED. HOWEVER WITH "/PROTOCOL" ENABLED EACH MESSAGE
SENT MUST BE ACKNOWLEDGED(ACK).

6.1.2 RECEIVE MODE

SPACE IS QUEUED FOR THE DEVICE TO RECEIVE MESSAGES.
AFTER RECEIVING AN "EXPECTED" NUMBER OF MESSAGES, THE DATA RECEIVED
CAN BE COMPARED AGAINST A LIST OF "EXPECT TO RECEIVE" MESSAGES
IF DATA-CHECKING IS ENABLED.

6.1.3 PASSIVE MODE

THEN EVERY TIME A MESSAGE IS RECEIVED, A MESSAGE IS TRANSMITTED.

DATA CHECKING CAN BE DONE ON THE RECEIVED DATA.THE "/ECHO, /NOECHO"
ENABLES/DISABLES THE RETRANSMISSION OF THE DATA RECEIVED.

6.1.4 ACTIVE MODE

A LIST OF MESSAGES IS TRANSMITTED AND MESSAGES ARE RECEIVED.
AFTER RECEIVING AN "EXPECTED" NUMBER OF MESSAGES, THE DATA RECEIVED
CAN BE COMPARED AGAINST A LIST OF "EXPECT TO RECEIVE" MESSAGES
IF DATA-CHECKING IS ENABLED.

NOTE: IF BOTH ENDS OF THE LINK ARE IN ACTIVE MODE, THEN THE
LINK MUST BE A FULL DUPLEX LINK!

6.1.5 DOWN-LINE-LOAD

DOWN-LINE-LOADING IS NOT SUPPORTED IN THE SOFTWARE FOR DUP-11
TO DUP-11 LINKS. HOWEVER IT IS POSSIBLE TO "REQUEST SECONDARY
LOAD" FROM A HOST STATION(IF SUPPORTED) IF THERE IS A DUP(M9312)
DECNET BOOTSTRAP MODULE IN YOUR MACHINE.
SEE BOOTSTRAP OPERATOR'S MANUAL.

6.1.6 TALK MODE

THE "TALK" END OF THE LINK TRANSMITS OPERATOR-TYPED MESSAGES
UNTIL A "EXIT" MESSAGE IS TYPED. AT THAT POINT, THE NODE GOES
INTO "LISTEN" MODE. AN "EXIT MESSAGE" IS A MESSAGE WHOSE FIRST
FOUR CHARACTERS ARE "EXIT". SINCE ONLY THE FIRST FOUR CHARACTERS
NEED TO BE "EXIT", MORE CHARACTERS CAN BE ADDED SO THAT A MESSAGE
MAY BE SENT AND THE MODE SWITCHED ALL AT ONCE. FOR EXAMPLE:

```
TLK> EXIT ALL OF THIS LINE IS SENT THEN MODE SWTICHED
```

6.1.7 LISTEN MODE

THE "LISTEN" END OF THE LINK PRINTS ALL OF THE MESSAGES
RECEIVED BY THE DEVICE ON THE OPERATOR'S CONSOLE. IF THE MESSAGE
RECEIVED IS AN "EXIT" MESSAGE, THEN THE NODE ENTERS "TALK" MODE.
AN "EXIT MESSAGE" IS A MESSAGE WHOSE FIRST FOUR CHARACTERS ARE "EXIT".

6.1.8 MAINTENANCE "LOOP" MODES

REMEMBER THAT THE WHENEVER A "RUN" COMMAND IS TYPED, THE DEFAULT IS NO LOOPBACK AND THAT A LOOP MODE MUST BE SPECIFIED BY A "/LOOP=.." IF A LOOP MODE IS DESIRED.
LOOP MODES ARE ONLY VALID IF THE MODE TO RUN IS ACTIVE !

INTERNALTTL LOOPS DATA INTERNAL TO THE USYNRT

THE FOLLOWING TABLE SUMMARIZES THE MODES THAT CAN BE RUN TOGETHER WHEN THE DCLT PROGRAM IS RUNNING ON TWO PROCESSORS (ONE AT EACH END OF THE LINK):

HALF DUPLEX START	STATION A "HOST" NODE	"/LOOP" ALLOWED?	STATION B "REMOTE" NODE	DUPLEX
B	TALK	NO	LISTEN*, RECEIVE	HALF OR FULL
A	LISTEN	NO	TALK*, TRANSMIT	HALF OR FULL
B	TRANSMIT	NO	RECEIVE*, LISTEN	HALF OR FULL
A	RECEIVE	NO	TRANSMIT*, TALK	HALF OR FULL
A	PASSIVE	NO	ACTIVE*	HALF OR FULL
-NA-	ACTIVE	YES	ACTIVE*	FULL
B	ACTIVE	YES	PASSIVE*	HALF OR FULL
-NA-	DOWNLINELOAD	** DOWN-LINE-LOADING IS NOT SUPPORTED FOR DUP-11		

*= MOST LIKELY TO BE IN THAT MODE

NOTE: H/D START COLUMN INDICATES WHICH NODE TO START FIRST ON A HALF DUPLEX LINK

IF PROTOCOL IS ENABLED, THE H/D START COLUMN CAN BE IGNORED.

6.2 MESSAGE DESCRIPTIONS

NAME	DESCRIPTION
ZEROES	MESSAGE OF ALL 0'S (00000000,00000000,00000000,...)
ONES	MESSAGE OF ALL 1'S (11111111,11111111,11111111,...)
1ALT	MESSAGE OF ALTERNATING 1'S (10101010,10101010,....)
0ALT	MESSAGE OF ALTERNATING 0'S (01010101,01010101,....)
CCITT	"CCITT" 512-BIT (VS. 511 BITS) TEST PATTERN
ITEP	"INTERPROCESSOR TEST PROGRAM'S (ITEP)" MESSAGE 1(DP1:) (<177><177>/$A THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG.<15><12><001><177><177><177><177>)
ALPHA	ALPHA-NUMERICS (OR FUTURE COMM TURNAROUND MSG) (#$!" (AMPERSAND)'()*+,-.0123456789:;<=>?@ABCDEFGHIJK LMNOPQRSTUVWXYZ/[\]^_%)
OPERATOR-SPECIFIED	"A-Z,0-9,SPACES,TABS" THESE ARE THAT THE CHARACTERS THAT CAN BE TYPED BETWEEN QUOTATION MARKS ("..") TO SPECIFIY A UNIQUE MESSAGE.

7.0 OTHER INFORMATION

7.1 INTERFACING TO AN "ITEP" NODE

THESE ARE THE RULES WHEN USING ITEP/WITH A DUV TO TALK
TO A DUP USING DCLT.

ITEP NODE	DCLT NODE
ANSWER ALL QUESTION TO THE SET SWITCHES PROMPT.	ANSWER ALL QUESTIONS TO THE DCLT> PROMPT.
FOR ONE WAY OUT... SET SWITCHES TO 1221	CLEAR EXPECTED SET E=ITEP/S=56 RUN MODE=REC/STATUS/CHECK/NOPROTOCOL
FOR ONE WAY IN..... SET SWITCHES TO 1222	RUN MODE=TRA/STATUS/NOPROTOCOL
FOR EXTERNAL LOOPBACK.... SET SWITCHES.....1224	CLEAR EXPECTED SET EXP=ITEP/S=56 RUN MODE=ACTIVE/STATUS/CHECK/NOPROTOCOL
FOR INTERNAL LOOPBACK..... SET SWTICHES.....1260	CLEAR EXPECTED SET EXP=ITEP/S=56 RUN MODE=ACTIVE/STATUS/CHECK/NOPR

NOTE: DO NOT USE SWITCH 8 WITH ITEP GOING TO DCLT
THE ONLY MESG. DCLT SUPPORTS IS MSG 1.
DCLT IGNORES CRC ERRORS WHEN REC DATA FROM ITEP
BECAUSE ITPE SENDS NO CRC.

7.2 TROUBLESHOOTING HINTS

LISTED BELOW ARE SOME SETUPS THAT COULD BE USED FOR ISOLATING FAULTS.
THESE ARE BY NO MEANS THE ONLY WAYS DCLT CAN BE USED !!!!!!!
DCLT IS MEANT TO BE A VERY FLEXIBLE TOOL! THIS SECTION IS MEANT TO
GIVE SOMEONE NOT TOO FAMILIAR WITH DCLT A PLACE TO START.

HINT::: IF THIS DOCUMENT IS TOO LARGE TO CONSUME, GET A COPY OF DEC'S
COMMUNICATION OPTIONS MINI REFERENCE GUIDE(EK-CM1N1-RM-001).

REMEMBER, IF YOU ARE HAVING TROUBLE WITH RX OVERRUN ERRORS OR MISSED
MESSAGES, OR DATA CHECK ERRORS-- DISABLE STATUS(/NOSTATUS). THE CPU
IS HAVING A HARD TIME SERVICING BOTH THE TTY AND DUP.

EVEN IF YOU ARE CHECKING OUT DUP-11 TO DUP-11 LINKS, IT IS A GOOD IDEA
TO ENABLE PROTOCOL(/PROTOCOL). BY EXAMINING THE DDCMP STATISTICAL AND
ERROR LOG, YOU WILL GET A COMPLETE PICTURE OF WHAT IS HAPPENING ON THE
LINK. NOISY COMM LINKS WILL BE DETECTED BETTER IF LARGE MESSAGES(512
CHARS) ARE SENT.

BOTH NODES MUST EITHER ENABLE(''/PROTOCOL'') OR DISABLE(''/NOPROTOCOL'').

NOTE: IF BOTH NODES IN ACTIVE AND ''/NOCHECK'' IS USED,
----- END-OF-PASS IS DEFINED AS RECEIVING 1 MESSAGE
AND COMPLETING THE TRANSMIT LIST. WITH NO DATA
CHECKING, THERE IS NO WAY FOR DCLT TO KNOW HOW
MANY MESSAGES IT SHOULD EXPECT TO RECEIVE.

7.2.1 INTERNAL LOOP AT EACH NODE

RUN EACH END OF THE LINK IN ACTIVE MODE WITH LOOP=INTERNAL.
TRANSMIT TWO OR THREE MESSAGES WITH NO DATA CHECKING.
STATUS PRINTING COULD BE TURNED OFF IF ON, BUT SEEING THE SEQUENCE
OF EVENTS MIGHT BE INFORMATIVE.

A POSSIBLE COMMMAND SEQUENCE IS:

```
C E
C T
SE T=ONES/S=20/C=2
R M=A/LO=I/NOCH/STAT/NPR
```

WHAT THE ABOVE COMMAND SEQUENCE MEANS:

THE ''C E'' AND THE ''C T'' INITIALIZES THE ''EXPECT''
LIST AND THE ''TRANSMIT LIST''. THE ''SE T=ONES/S=20/C=2''
SETS THE TRANSMIT LIST TO CONTAIN 3 MESSAGES. THE MESSAGES
CONTAIN DATA OF ALL ONES AND EACH ONE IS 20 BYTES IN LENGTH.
THE ''R M=A/LO=I/NOCH/STAT'' SETS THE MODE TO RUN IN TO BE
ACTIVE AND LOOP TYPE TO BE INTERNAL TTL. THE PROGRAM WILL
NOT BE CHECKING DATA SO THERE WAS NO NEED TO SET UP AN
EXPECT LIST. THE PROGRAM WILL BE PRINTING STATUS MESSAGES.

WHAT YOU SHOULD SEE AFTER ENTERING THE RUN COMMAND
IF THINGS ARE RUNNING CORRECTLY :

```
INI RXQ TXQ RXQ TXC TXQ RXQ TXC
TXQ RXQ TXC EOP
     MODE=ACTIVE/LOOP=INTERNAL/PASS=00000
                 /STATUS/NOCHECK/NOECHO/NOMODEM/NOPROTOCOL
DCLT> (A)  ?
```

THIS GIVES YOU A IDEA IF THE COMM. DEVICE CAN EVEN TRANSMIT AND RECEIVE. ANY ERRORS REPORTED WILL PROBABLY BE DUE TO INCORRECT DEVICE ADDRESSES BEING USED OR A FAULTY DEVICE. CHECK ADDRESSES WITH "DISPLAY" AND RUN THE PREREQUISITE DIAGNOSTICS FOR THE COMM. DEVICE.

NOW TRY RUNNING EACH NODE THE SAME WAY WITH DATA CHECKING ENABLED.
A POSSIBLE COMMMAND SEQUENCE IS:

```
SE E=T
R M=A/LO=I/CH/PAS=3/PR
```

WHAT THIS SEQUENCE MEANS:

THIS SEQUENCE IS SIMILAR TO THE ONE ABOVE . THE "SE E=T" MAKES A COPY OF THE TRANSMIT LIST IN THE EXPECT LIST. THE EXPECT LIST NOW CONTAINS 3 MESSAGES. THE MESSAGES WILL HAVE ALL ONES FOR DATA AND BE 20 BYTES EACH IN LENGTH. THE RUN COMMAND IS THE SAME WITH THE ADDITION OF TWO SWITCHES "/CH/PAS=3". THE "CH" SWITCH TELLS THE PROGRAM TO CHECK THE RECEIVED DATA AGAINST THE "EXPECTED LIST". THE "PAS=3" SWITCH TELLS THE PROGRAM TO RUN 3 PASSES BEFORE RETURNING TO THE DCLT> PROMPT. ON NON-DDCMP LINKS, THE "/PROTOCOL" SWITCH IS OPTIONAL.

WHAT YOU SHOULD SEE AFTER ENTERING THE RUN COMMAND
IF THINGS ARE RUNNING CORRECTLY :

```
INI RXQ TXQ TXC RXQ TXQ TXC RXQ
TXQ TXC CMP CMP CMP EOP RXQ TXQ
TXC RXQ TXQ TXC RXQ TXQ TXC CMP
CMP CMP EOP RXQ TXQ TXC RXQ TXQ
TXC RXQ TXQ TXC CMP CMP CMP EOP
     MODE=ACTIVE/LOOP=INTERNAL/PASS=00000
                 /STATUS/CHECK/NOECHO/NOMODEM/PROTOCOL
```

IF A CABLE TURNAROUND CONNECTOR IS AVAILABLE, PUT IT ON THE END OF THE CABLE JUST BEFORE THE MODEM AND RUN IN ACTIVE MODE WITH THE "/LOOP=CABLE" SWITCH.

POSSIBLE COMMAND SEQUENCE IS:

```
R M=A/L=C/CH/PAS=3
```

WHAT THIS SEQUENCE MEANS:

THIS SEQUENCE HAS THE "/LO=C". THIS INFORMS THE SOFTWARE NOT TO CHECK FOR DATA SET READY SIGNAL FROM THE MODEM. ALSO A CLOCK SIGNAL IS FURNISHED BY THE DUP.

WHAT YOU SHOULD SEE AFTER ENTERING THE RUN COMMAND
IF THINGS ARE RUNNING CORRECTLY :

```
INI RXQ TXQ TXC RXQ TXQ TXC RXQ
TXQ TXC CMP CMP CMP EOP RXQ TXQ
TXC RXQ TXQ TXC RXQ TXQ TXC CMP
CMP CMP EOP RXQ TXQ TXC RXQ TXQ
TXC RXQ TXQ TXC CMP CMP CMP EOP
     MODE=ACTIVE/LOOP=CABLE/PASS=00000
                 /STATUS/CHECK/NOECHO/NOMODEM/PROTOCOL
DCLT> (A)  ?
```

7.2.2 TRANSMIT ON ONE NODE RECEIVE ON THE OTHER

NOW TRY TRANSMIITING FROM ONE END AND RECEIVING ON THE OTHER. MAYBE WITH NO DATA CHECKING AT FIRST TO ESTABLISH IF THE LINK IS WORKING. POSSIBLE COMMAND SEQUENCES ARE:

NODE A	NODE B
C E	C E
C T	C T
R M=TR/NOCH/PAS=3/NPR	R M=R/NOCH/PAS=3/NPR

```
                    WHAT THIS SEQUENCE MEANS:

                            THE "C E " AND "C T" INITIALIZE BOTH THE
                            TRANSMIT AND EXPECT LISTS. THE "R M=TR/PAS=3" SETS
                            THE RUN MODE OF NODE A TO BE TRANSMIT AND THE PASS
                            COUNT IS SET TO 3. THE "R M=R/NOCH/PAS=3" SETS THE RUN
                            MODE OF NODE B TO RECEIVE WITH NO DATACHECKING AND
                            THE PASS COUNT IS SET TO THREE.
                            PROTOCOL CAN BE OPTIONAL BUT IT MUST BE ENABLE OR
                            DISABLE ON BOTH ENDS.

                    WHAT YOU SHOULD SEE AFTER ENTERING THE RUN COMMAND
                    IF THINGS ARE RUNNING CORRECTLY :

                    FOR NODE A:

                            INI TXQ TXC EOP TXQ TXC EOP TXQ
                            TXC EOP
                                 MODE=TRANSMIT/PASS=00000
                                             /STATUS/NOCHECK/NOECHO/NOMODEM/NOPROTOCOL
                            DCLT> (A)  ?

                    FOR NODE B:
                            INI RXQ EOP RXQ EOP RXQ EOP
                                 MODE=RECEIVE/PASS=00000
                                             /STATUS/NOCHECK/NOECHO/NOMODEM/NOPROTOCOL
                            DCLT> (A)  ?


                    NOW TRY DOING DATA CHECKING ON THE MESSAGE(S) BEING
                    TRANSMITTED.  POSSIBLE COMMAND SEQUENCES ARE:


                            R M=TR/PAS=3                        R M=R/CH/PAS=3

                    WHAT THIS SEQUENCE MEANS:

                            THE CHANGE IN THE RUN COMMAND IS FROM "NOCH" TO
                            "CH". THE "CH" ENABLES DATA CHECKING.

                    WHAT YOU SHOULD SEE AFTER ENTERING THE RUN COMMAND IF THINGS
                    ARE RUNNING CORRECTLY:

                    NODE A: IS THE SAME AS ABOVE.

                    NODE B:
                            INI RXQ CMP EOP RXQ CMP EOP RXQ CMP EOP
                             MODE=RECEIVE/PASS=00000
                                     /STATUS/CHECK/NOECHO/NOMODEM/PROTCOL
                            DCLT> (A)?

                    NOW RUN THRU THE SEQUENCE AGAIN WITH NODE A RECEIVING
                    AND NODE B TRANMITTING TO CHECK OUT THE OPPOSITE
                    DIRECTION OF DATA FLOW.
```

7.2.3 ONE NODE ACTIVE THE OTHER NODE PASSIVE

NOW TRY RUNNING ONE NODE IN ACTIVE MODE WHILE THE OTHER
END RUNS IN PASSIVE. DATA CHECKING SHOULD BE TURNED OFF
IF THE MESSAGE LISTS ARE NOT THE SAME.
POSSIBLE COMMAND SEQUENCES ARE:

NODE A	NODE B
C E	C E
C T	C T
SE T=CCITT/S=10/C=2	SE T=1ALT/S=20/C=2
R M=ACT/NOCH/PAS=3	R M=P/NOCH/PAS=3

WHAT THIS SEQUENCE MEANS:
THE EXECUTION OF THIS SEQUENCE CAUSES THE FOLLOWING
THINGS TO HAPPEN ON NODE A. THE TRANSMIT AND EXPECT
LISTS ARE INITIALIZED THEN THE TRANSMIT LIST IS SET
TO 3 MESSAGES OF 10 BYTES EACH. THE DATA USED IN THE
TRANSMIT MESSAGES IS THE CCITT PATTERN. THEN NODE A
IS RUN IN ACTIVE MODE WITH DATA CHECKING DISABLED AND
THE PASS COUNT SET TO THREE. NOTE STATUS WOULD STILL BE
PRINTED IF THE PREVIOUS SEQUENCES HAD BEEN RUN.
IF YOU ARE RUNNING FROM LOAD TIME YOU WOULD HAVE
TO ADD A "/STA TO THE RUN COMMAND LINE.

NODE B: THE TRANSMIT AND EXPECT LISTS ARE INTIALIZED
THEN THE TRANSMIT LIST IS SET TO 3 MESSAGES OF
20 BYTES EACH. THE DATA FOR EACH MESSAGE IS ALTERNATING
1'S AND 0'S. THE NODE IS THEN RUN IN PASSIVE MODE WITH
DATA CHECKING DISABLED AND THE PASS COUNT SET TO 3.

WHAT YOU SHOULD SEE AFTER ENTERING THE RUN COMMAND
IF THINGS ARE RUNNING CORRECTLY :

FOR NODE A:

```
INI RXQ TXQ TXC RXQ TXQ TXC RXQ
TXQ TXC EOP RXQ TXQ TXC RXQ TXQ
TXC RXQ TXQ TXC EOP RXQ TXQ TXC
RXQ TXQ TXC RXQ TXQ TXC EOP
     MODE=ACTIVE/PASS=00000
                 /STATUS/NOCHECK/NOECHO/NOMODEM/NOPROTOCL
DCLT> (A)  ?
```

FOR NODE B:

```
INI RXQ TXQ TXC RXQ TXQ TXC RXQ
TXQ TXC EOP RXQ TXQ TXC RXQ TXQ
TXC EOP RXQ TXQ TXC RXQ TXQ TXC
RXQ TXQ TXC EOP
     MODE=PASSIVE/PASS=00000
                 /STATUS/NOCHECK/NOECHO/NOMODEM/NOPROTOCOL
DCLT> (A)  ?
```

NOW USE DATA CHECKING WITH THE "EXPECT MESSAGE LISTS" SET
UP APPROPRIATELY. ANOTHER VARIATION IS TO HAVE LARGE SIZE
MESSAGES ON ONE SIDE WITH SMALL MESSAGES ON THE OTHER.

THEN REVERSE THE SETUP SO THAT THE NODE RUNNING IN ACTIVE
IS RUNNING IN PASSIVE AND VICE VERSA.

7.2.4 BOTH NODES ACTIVE

NOW BOTH NODES CAN BE RUN IN ACTIVE WITH DATA CHECKING ON.
STATUS PRINTING COULD BE TURNED OFF IF YOU'RE NOT INTERESTED
IN THEM.

NODE A	NODE B
C E	C E
C T	C T
SE T=OALT/S=10	SE E=OALT/S=10
SE T=CCITT/S=20	SE E=CCITT/S=20
SE T=ALPHA/S=30	SE E=ALPHA/S=30
SE E=ZERO/S=11	SE T=ZERO/S=11
SE E=ONES/S=21	SE T=ONES/S=21
SE E=ITEP/S=31	SE T=ITEP/S=31
R M=A/CH/NOST/PAS=3	R M=A/CH/NOST/PAS=3

WHAT THIS SEQUENCE MEANS:
NODE A SETS UP IS TRANSMIT LIST TO BE
3 MESSAGES. MESSAGE 1 IS 10 BYTES LONG AND
CONTAINS DATA OF ALTENATING 0'S AND 1'S
MESSAGE 2 IS 20 BYTES LONG AND CONTAINS
DATA OF THE CCITT PATTERN. MESSAGE THREE
IS 30 BYTES LONG AND CONTAINS ALPHANUMERICS
FOR DATA. THE EXPECT LIST ALSO CONTAINS
3 MESSAGES. MESSAGE 1 IS 11 BYTES LONG AND
CONTAINS 0'S FOR DATA. MESSAGE TWO IS 21
BYTES LONG AND CONTAINS 1'S FOR DATA. MESSAGE
3 IS 31 BYTES LONG AND CONTAINS THE ITEP DATA.
NODE B HAS THE SAME MESSAGES EXCEPT THAT THE
TRANSMIT MESSAGE LIST IS THE EXPECT MESSAGE LIST
AND VICE VERSA.
BOTH NODES ARE RUN IN THE ACTIVE MODE WITH
DATA CHECKING AND PASS COUNT EQUAL TO THREE.

WHAT YOU SHOULD SEE AFTER ENTERING THE RUN COMMAND
IF THINGS ARE RUNNING CORRECTLY :
ON BOTH NODES A AND B:

```
        MODE=ACTIVE/PASS=00000
                    /NOSTATUS/CHECK/NOECHO/NOMODEM/NOPROTOCOL
DCLT> (A)  ?
```

A GOOD VARIATION THAT CAN BE USED IS TO LOAD THE TRANSMIT LIST AND
EXPECT LIST WITH A LARGE MESSAGE(512 CHARACTERS),ENABLE PROTOCOL,
AND RUN MANY PASSSES ON BOTH ENDS.

```
DCLT>(A)? CL T
DCLT>(A)? CL E
DCLT>(A)? SET T=CCITT/SIZE=512
DCLT>(A)? SET E=T
DCLT>(A)? R M=A/NST/CH/PA=255/PR
```

7.2.5 TALK AND LISTEN MODES FOR COMMUNICATING

TALK AND LISTEN MODES ARE USEFUL IF THE OPERATORS WISH TO COMMUNICATE WITH EACH OTHER. JUST SETUP A TIME THAT EACH WILL GO TO THEIR MODE, TALK OR LISTEN, AND SEND MESSAGES OVER THE LINK. POSSIBLE COMMAND SEQUENCES ARE.

```
R M=LIS/NOST            R M=TA/NOST
LIS>                    TLK>
```

7.3 EXAMPLES OF COMMANDS

THIS SECTION WILL SHOW A SAMPLING OF COMMANDS AND EXACTLY WHAT TO EXPECT FROM THEM.

7.3.1 EXAMPLES OF MESSAGES COMMANDS

THE CLEAR COMMANDS .

```
C E
C T
```

THIS WILL INITIALIZE THE TRANSMIT AND EXPECT LIST TO 1 MESSAGE OF 58 BYTES. THE DATA OF THE MESSAGE WILL BE THE ITEP MESSAGE.

IF THESE COMMANDS ARE FOLLOWED BY A SHOW COMMAND

```
SH E
```

SUCH AS THE SHOW EXPECT LIST. WHAT YOU WOULD SEE IS

```
MSG: TYPE=ITEP/SIZE=58
     MODE=ACTIVE/PASS=00001
                 /NOSTATUS/CHECK/NOECHO/NOMODEM/NOPROTOCOL
DCLT> (A) ?
```

NOW IF YOU DID A SET EXPECT LIST COMMAND SUCH AS:

```
SE E=A/S=35/C=3
```

AND FOLLOWED IT WITH A SHOW EXPECT LIST COMMAND

```
SH E
```

```
                    WHAT YOU WOULD SEE IS
                            MSG: TYPE=ALPHA/SIZE=35
                            MSG: TYPE=ALPHA/SIZE=35
                            MSG: TYPE=ALPHA/SIZE=35
                            MSG: TYPE=ALPHA/SIZE=35
                                 MODE=ACTIVE/PASS=00001
                                              /NOSTATUS/CHECK/NOECHO/NOMODEM/NOPROTOCOL
                            DCLT> (A) ?
```

7.3.2 EXAMPLES STATISTICAL COMMANDS

```
IF YOU TYPE A HELP COMMMAND
        HELP
WHAT YOU WILL SEE IS
DCLT CMDS:
 CLEAR OR SHOW  EXPECTLIST OR TRANSMITLIST
 PRINT
 EXIT
 DUMP START-END/B
 SET EXPECTMSG OR TRANSMITMSG=TYPE/SIZE=N OR /COPY=N
 SET EXPECT=TRANSMIT
   TYPE=ONES,ZEROES,1ALT,0ALT,ITEP,CCITT,ALPHA
        OR 'OPR SPCD=A-Z,SP,TAB,0-9 IN QUOTES''
 RUN MODE=MTYP/LOOP=LTYP/CHECK,PROTOCOL,STATUS,ECHO,MODEM,PASS=N
   MTYP=TRAN,REC,ACT,PAS,TAL,LIS,DOWN
   LTYP=INT,CAB,LOC,REM/

DCLT> (A)  ?

THE SAME WILL HAPPEN IF YOU USE THE ?

THE DUMP COMMAND WORKS LIKE THIS
        DUM 41260-41300
THIS WILL DUMP THE DATA FROM ADDRESSES 41260 TO
41300 IN THE FOLLOWING MANNER

41260   104423  000167 177772 021122 012112 006312 006312 006312
41300   006312
IF YOU HAD USED THE /B SWITCH
        DUM 41260-41300/B
WHAT YOU WOULD SEE IS
        41260   023 211 167 000 372 377 122 024
        41270   112 024 312 014 312 014 312 014
        41300   312
```

7.3.3 EXAMPLES RUN COMMMANDS

YOU CAN FIND SEVERAL EXAMPLES OF THE RUN COMMMAND IN THE
TROUBLE SHOOTING HINTS SECTION BUT HERE ARE SOME OTHERS.

IF YOU WERE TO EXECUTE THE RUN COMMAND
        R M=TR/NOST/CH/PAS=4
WHAT WOULD HAPPEN IS AFTER 4 PASSES THE PROGRAM WOULD RETURN
TO THE DCLT PROMPT AND PRINT
        MODE=TRANSMIT/PASS=00000
                /NOSTATUS/CHECK/NOECHO/NOMODEM/NOPRTOCOL
  DCLT> (A) ?
IF YOU WERE TO EXECUTE THE RUN COMMAND
        C E
        C T
        R M=A/LO=I/ST/CH/PAS=3/PROTOCOL
WHAT YOU WOULD SEE (IF USING DEFAULT TRANSMIT AND EXPECT
MESSAGES) IS
        INI RXQ TXQ TXC CMP EOP RXQ TXQ
        TXC CMP EOP RXQ TXQ TXC CMP EOP
        MODE=ACTIVE/LOOP=INTERNAL/PASS=0000
                /STATUS/CHECK/NOECHO/NOMODEM/PROTOCOL
  DCLT> (A) ?

IF YOU USE THE EXIT COMMAND
        EXIT
WHAT YOU WOULD SEE IS
        CZDCL EOP
             0 CUMLATIVE ERRORS

        DR>

7.3.4 EXAMPLES PRINT COMMANDS

THE PRINT COMMMAND CAN BE USED FROM THE SUPERVISOR (DR>)
LEVEL OR THE DCLT (DCLT>) LEVEL. ONCE YOU ARE AT THE
REPORT LEVEL YOU WILL KNOW IT BY THE PROMPT 'RPT>".
AFTER TYPING PRI FOR EITHER THE THE DLCT> OR DR> THE
FOLLOWING IS DISPLAYED.

```
        TYPE "H" OR  "?" FOR HELP!
        RPT> (A)  ?
```

HERE ARE SOME EXAMPLES OF RPT> LEVEL COMMANDS:

THE HELP OR ? COMMAND

```
        HELP
```

OR

```
        ?
```

PRODUCES THE FOLLOWING:

```
DCLT REPORT CMDS:
LOG - PRINT DCLT EVENT LOG
EXIT - EXIT REPORT LEVEL
HELP - PRINT THIS MESSAGE
COUNTERS/SW - PRINT DDCMP COUNTERS
WHERE /SW=FULL, /ERRORS, /OFFSET=NN(O)

RPT> (A)  ? LOG
```

THE LOG COMMAND PRODUCES THE FOLLOWING

```
>>> DCLT EVENT LOG ENTRY >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
    0:01:17    ^C ABORT
   PASS = 12   ERRORS = 0    STRT-TO = 0
>>> DCLT EVENT LOG ENTRY >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
    0:01:16   TRANSMIT MSG QUEUED
   ADDR OF MSG=003150   BYTE COUNT= 58
        MODEM STATUS: CTS DSR DCD RTS RI SRD
                       0   1   0   0   1  0
>>> DCLT EVENT LOG ENTRY >>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
    0:01:16   RECEIVE SPACE QUEUED
   ADDR OF MSG=004150   BYTE COUNT= 512
        MODEM STATUS: CTS DSR DCD RTS RI SRD
                       0   1   0   0   1  0
                        .....
                        .....
                        .....

        THIS GOES ON FOR 45 EVENTS IF THE MODE
        PREVIOUSLY EXECUTED HAD THAT MANY
        YOU EXIT FROM EVENT LOG PRINTING BY
        TYPING A CONTROL C.
```

TO LEAVE THE REPORT LEVEL INPUT THE "EXIT" COMMAND.

7.3.5 EXAMPLE EXIT COMMAND

THE EXIT COMMAND WORKS LIKE THIS. IF YOU
ENTERED THE REPORT LEVEL FROM THE SUPERVISOR
(DR>)THEN TYPING

```
EXIT
```

WILL RETURN YOU TO THE SUPERVISOR.

```
DR>
```

IF YOU ENTERED REPORT FROM THE DCLT LEVEL
THEN TYPING

```
EXIT
```

WILL RETURN YOU TO THE DCLT LEVEL.

```
DCLT>
```

7.4 THINGS TO WATCH OUT FOR

IF YOU ARE RUNNING DCLT ON SYSTEMS THAT HAVE CONSOLES
WITH DIFFERENT SPEEDS YOU WILL BE UNABLE TO USE THE
PRINT STATUS FEATURE IN CERTAIN MODES. THE RULE IS
IF IT DOESNT WORK WITH STATUS PRINTING RUN THE MODE
WITH NOSTATUS.

IF YOU ARE USING PASSIVE MODE WITH THE ECHO SWITCH
THEN YOU WILL PROBABLY HAVE TO RE-ENTER THE TRANSMIT
LIST ON THE SIDE WITH THE ECHO SWITCH. THE REASON IS
THAT THE TRANSMIT LIST GETS OVER WRITTEN WITH THE
RECEIVE LIST WHEN USING THE ECHO SWITCH. ALSO DISABLE
DATACHECKING(''/NOCHECK'').

IF YOU ARE RUNNING HALF/DUPLEX IT IS BEST TO USE THE ''/NOMODEM''
SWITCH BECAUSE EVERY TIME THE LINE IS TURNAROUND A MODEM CHANGE
WILL BE REPORTED.

IF YOU ARE RUNNING WITH ''/PROTOCOL'' SELECTED THE MODEM STATUS AS
REPORTED IN THE EVENT LOG MAY NOT INDICATE THE TRUE CONDITION OF
THE MODEM SIGNALS. THIS IS BECAUSE THE EVENT IS LOGGED BEFORE THE
MESSAGE IS PASSED TO THE DDCMP PROTOCOL LAYER WHERE THE RX,TX AND
MODEM SIGNALS ARE MANIPULATED.

```
                                .SBTTL  PROGRAM HEADER
002000                                  BGNMOD



                                ;++
                                ; THE PROGRAM HEADER IS THE INTERFACE BETWEEN
                                ; THE DIAGNOSTIC PROGRAM AND THE SUPERVISOR.
                                ;--

002000                                  POINTER BGNRPT,BGNAU,BGNDU



                                HEADER  CZDCL,B,0,1800.,0,#PRI07

002000
002000          103             L$NAME::
002001          132                     .ASCII /C/
002002          104                     .ASCII /Z/
002003          103                     .ASCII /D/
002004          114                     .ASCII /C/
002005          000                     .ASCII /L/
002006          000                     .BYTE   0
002007          000                     .BYTE   0
002010                                  .BYTE   0
002010          102             L$REV::
002011                                  .ASCII  /B/
002011          060             L$DEPO::
002012                                  .ASCII  /0/
002012  000000                  L$UNIT::
002014                                  .WORD   0
002014  003410                  L$TIML::
002016                                  .WORD   1800.
002016  046230                  L$HPCP::
002020                                  .WORD   L$HARD
002020  000000                  L$SPCP::
002022                                  .WORD   0
002022  002130                  L$HPTP::
002024                                  .WORD   L$HW
002024  000000                  L$SPTP::
002026                                  .WORD   0
002026  046616                  L$LADP::
002030                                  .WORD   L$LAST
002030  000000                  L$STA::
002032                                  .WORD   0
                                L$CO::
```

```
2043  002032  000000                        .WORD   0
2044  002034                        L$DTYP::
2045  002034  000000                        .WORD   0
2046  002036                        L$APT::
2047  002036  000000                        .WORD   0
2048  002040                        L$DTP::
2049  002040  002124                        .WORD   L$DISPATCH
2050  002042                        L$PRIO::
2051  002042  000340                        .WORD   #PRIO7
2052  002044                        L$ENVI::
2053  002044  000000                        .WORD   0
2054  002046                        L$EXP1::
2055  002046  000000                        .WORD   0
2056  002050                        L$MREV::
2057  002050     003                        .BYTE   C$REVISION
2058  002051     003                        .BYTE   C$EDIT
2059  002052                        L$EF::
2060  002052  000000                        .WORD   0
2061  002054  000000                        .WORD   0
2062  002056                        L$SPC::
2063  002056  000000                        .WORD   0
2064  002060                        L$DEVP::
2065  002060  011524                        .WORD   L$DVTYP
2066  002062                        L$REPP::
2067  002062  025336                        .WORD   L$RPT
2068  002064                        L$EXP4::
2069  002064  000000                        .WORD   0
2070  002066                        L$EXP5::
2071  002066  000000                        .WORD   0
2072  002070                        L$AUT::
2073  002070  026334                        .WORD   L$AU
2074  002072                        L$DUT::
2075  002072  026326                        .WORD   L$DU
2076  002074                        L$LUN::
2077  002074  000000                        .WORD   0
2078  002076                        L$DESP::
2079  002076  011534                        .WORD   L$DESC
2080  002100                        L$LOAD::
2081  002100  104035                        EMT     E$LOAD
2082  002102                        L$ETP::
2083  002102  000000                        .WORD   0
2084  002104                        L$ICP::
2085  002104  025352                        .WORD   L$INIT
2086  002106                        L$CCP::
2087  002106  026240                        .WORD   L$CLEAN
2088  002110                        L$ACP::
2089  002110  026236                        .WORD   L$AUTO
2090  002112                        L$PRT::
2091  002112  025344                        .WORD   L$PROT
2092  002114                        L$TEST::
2093  002114  000000                        .WORD   0
2094  002116                        L$DLY::
2095  002116  000000                        .WORD   0
2096  002120                        L$HIME::
2097  002120  000000                        .WORD   0
2098
```

```
                        .SBTTL  DISPATCH TABLE

                        ;++
                        ; THE DISPATCH TABLE CONTAINS THE STARTING ADDRESS OF EACH TEST.
                        ; IT IS USED BY THE SUPERVISOR TO DISPATCH TO EACH TEST.
                        ;--

002122                          DISPATCH 1
002122  000001                                                  .WORD   1
002124                                                  L$DISPATCH::
002124  026342                                                  .WORD   T1

```

```
                                .SBTTL  DEFAULT HARDWARE P-TABLE

                                ;++
                                ; THE DEFAULT HARDWARE P-TABLE CONTAINS DEFAULT VALUES OF
                                ; THE TEST-DEVICE PARAMETERS.  THE STRUCTURE OF THIS TABLE
                                ; IS IDENTICAL TO THE STRUCTURE OF THE HARDWARE P-TABLES,
                                ; AND IS USED AS A "TEMPLATE" FOR BUILDING THE P-TABLES.
                                ;--

002126                                  BGNHW   DFPTBL
002126  000010                                                         .WORD   L10000-L$HW/2
002130                                                          L$HW::
002130                                                          DFPTBL::

                                ;INDEPENDENT SECTION
                                ;       THE NUMBERS IN BRACKETS ARE THE OFFSET VALUES USED IN THE PARAMETER
                                ;       CODING SECTION.

002130  000001                          .WORD   1               ;[0] FULL OR HALF DUPLEX FLAG (BIT0=1 IF FULL)

                                ;DEVICE DEPENDENT SECTION
                                ;       ADDING OR REMOVING WORDS FROM THIS TABLE EFFECTS THE "GET" CALLS IN
                                ;       THE HARDWARE PARAMTER CODING SECTION BY CHANGING "OFFSETS"

002132  160170                          .WORD   160170          ;[2] CSR ADDRESS
002134  000300                          .WORD   300             ;[4] INTERRUPT VECTOR
002136  000240                          .WORD   240             ;[6] INTERRUPT PRIORITY (5)
002140  000000                          .WORD   0               ;[10] MULTI POINT =1   PT TO PT = 0
002142  000001                          .WORD   1               ;[12] TRIB ADDRESS THIS STATION
002144  000000                          .WORD   0               ;[14] OTHER NODE "ITEP"
002146  000000                          .WORD   0               ;[16] SPARE

002150                                  ENDHW
002150                                                  L10000:
```

```
2150
2151
2152
2153
2154                                    .SBTTL  GLOBAL EQUATES SECTION
2155
2156
2157
2158
2159                                    ;++
2160                                    ; THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
2161                                    ; ARE USED IN MORE THAN ONE TEST.
2162                                    ;--
2163
2164
2165  002150                                    EQUALS
2166                                    ;
2167                                    ; BIT DIFINITIONS
2168                                    ;
2169            100000                  BIT15== 100000
2170            040000                  BIT14== 40000
2171            020000                  BIT13== 20000
2172            010000                  BIT12== 10000
2173            004000                  BIT11== 4000
2174            002000                  BIT10== 2000
2175            001000                  BIT09== 1000
2176            000400                  BIT08== 400
2177            000200                  BIT07== 200
2178            000100                  BIT06== 100
2179            000040                  BIT05== 40
2180            000020                  BIT04== 20
2181            000010                  BIT03== 10
2182            000004                  BIT02== 4
2183            000002                  BIT01== 2
2184            000001                  BIT00== 1
2185                                    ;
2186            001000                  BIT9==  BIT09
2187            000400                  BIT8==  BIT08
2188            000200                  BIT7==  BIT07
2189            000100                  BIT6==  BIT06
2190            000040                  BIT5==  BIT05
2191            000020                  BIT4==  BIT04
2192            000010                  BIT3==  BIT03
2193            000004                  BIT2==  BIT02
2194            000002                  BIT1==  BIT01
2195            000001                  BIT0==  BIT00
2196                                    ;
2197                                    ; EVENT FLAG DEFINITIONS
2198                                    ;   EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
2199                                    ;
2200            000040                  EF.START==      32.                     ; START COMMAND WAS ISSUED
2201            000037                  EF.RESTART==    31.                     ; RESTART COMMAND WAS ISSUED
2202            000036                  EF.CONTINUE==   30.                     ; CONTINUE COMMAND WAS ISSUED
2203            000035                  EF.NEW==        29.                     ; A NEW PASS HAS BEEN STARTED
2204            000034                  EF.PWR==        28.                     ; A POWER-FAIL/POWER-UP OCCURRED
2205                                    ;
```

```
2206                                    ;
2207                                    ; PRIORITY LEVEL DEFINITIONS
2208                                    ;
2209            000340                  PRI07== 340
2210            000300                  PRI06== 300
2211            000240                  PRI05== 240
2212            000200                  PRI04== 200
2213            000140                  PRI03== 140
2214            000100                  PRI02== 100
2215            000040                  PRI01== 40
2216            000000                  PRI00== 0
2217                                    ;
2218                                    ;OPERATOR FLAG BITS
2219                                    ;
2220            000004                  EVL==         4
2221            000010                  LOT==        10
2222            000020                  ADR==        20
2223            000040                  IDU==        40
2224            000100                  ISR==       100
2225            000200                  UAM==       200
2226            000400                  BOE==       400
2227            001000                  PNT==      1000
2228            002000                  PRI==      2000
2229            004000                  IXE==      4000
2230            010000                  IBE==     10000
2231            020000                  IER==     20000
2232            040000                  LOE==     40000
2233            100000                  HOE==    100000
2234
```

```
                        ;***** INDEPENDENT EQUATES

001000                          BUFLIM=512.             ;MAX BUFFER SIZE IN BYTES
                                                        ;  APPLIES TO TX,RX AND CMP BUFFS
000017                          MSGLIM=15.              ;MAX NO. OF MESSAGES PER BUFFER
                                                        ;  (FOR EACH INCREMENT (+1) TO MSGLIM,
                                                        ;   ADD 6 WORDS TO THE POINTER TABLE
                                                        ;   (PTRTAB:) SINCE THIS MEANS 2 MORE
                                                        ;   "POINTER" WORDS PER BUFFER.

                        ;MODE OF OPERATION EQUATES
000000                          REC=0                   ;RECEIVE MODE
000001                          TRA=1                   ;TRANSMIT MODE
000002                          PAS=2                   ;PASSIVE MODE
000003                          ACT=3                   ;ACTIVE MODE
000004                          DOW=4                   ;DOWN-LINE-LOAD MODE
000005                          TAL=5                   ;TALK MODE
000006                          LIS=6                   ;LISTEN MODE
                        ;MAINT LOOP TYPE EQUATES
000000                          NONE=   0               ;NO LOOP
000001                          TTL=    1               ;INTERNAL TTL
000002                          CABLE=  2               ;CABLE LOOP
000003                          MODLOC= 3               ;MODEM LOCAL
000004                          MODREM= 4               ;MODEM REMOTE
000005                          MOP=    5               ;MOP


                        ;CLOCK ENABLE VALUES TO BE LOADED IN CLK'S CSR
000100                          LCLKEN= 100             ;L-CLOCK CSR VALUE TO ENABLE THE CLOCK
000111                          PCLKEN= 111             ;P-CLOCK CSR VALUE TO ENABLE THE CLOCK
001600                          PCLKCT= 1600            ;P-CLOCK COUNT SET REGISTER FOR COUNTER

                        ;PARAM WORD EQUATES

000001                          STATB=  BIT0            ;OPERATOR AWAKE ASKED FOR
000002                          DATCKB= BIT1            ;DATA CHECK BIT
000004                          ECHOB=  BIT2            ;ECHO BIT
000010                          MOCHK=  BIT3            ;MODEM STATUS CHECK BIT
000020                          CRCB=   BIT4            ;CRC CALCUALTE ASKED FOR
000040                          PROTOB= BIT5            ;PROTOCOL PROCESSING ASKED FOR
000100                          PRORUN= BIT6            ;PROTOCOL IS RUNNING(NOT STARTING OR MAINT)
000200                          ABORT=  BIT7            ;FATAL PROTOCOL ERROR(SET IN PROTOCOL CODE)

                        ;OPTION TYPE EQUATES


000000                          DPV=    0       ;CODE FOR DPV CHAR MODE

                        ;EVENT LOG MESSAGE TYPES (USED TO LOCATE EVENT DESCRIPTION IN EVENT TABLE
                        ;  AND DISPATCHING TO SEPERATE SECTIONS OF THE EVENT REPORTING SECTION)
000000                          TXQ=    0               ;TRANSMIT MESSAGE QUEUED
000002                          TXC=    2               ;TRANSMIT COMPLETE
000004                          RXQ=    4               ;RECEIVE BUFFER QUEUED
000006                          RXC=    6               ;RECEIVE COMPLETE
000010                          DER=    10              ;DEVICE INFORMATION
000012                          DVI=    12              ;DEVICE ABOUT TO INIT
```

```
2291    000014                  DCK=    14              ;DATA COMPARISON RESULTS
2292
2293    000016                  MSC=    16              ;MODEM STATUS CHANGE
2294
2295    000020                  DLE=    20              ;DATA COMPARISON LENGH ERROR
2296    000022                  DDE=    22              ;DATA COMPARISON DATA ERROR
2297    000024                  EOP=    24              ;END OF PASS
2298    000026                  ABO=    26              ;^C ABORT
2299
2300                    ;EQUATES FOR FLAG WORD
2301
2302    000001                  ININT=  BIT0            ;INPUT INT. REC.
2303    000002                  OTINT=  BIT1            ;OUTPUT INT REC
2304    000004                  QRX=    BIT2            ;RX QUED /COMPL
2305    000010                  QTX=    BIT3            ;TX QUED/COMPL
2306    000100                  ERX=    BIT6            ;EXPECT TO GET A RX COMPLED
2307    000200                  ETX=    BIT7            ;EXPECT TO GET A TX COMPLETED
2308
2309
2310    000020                  TXM=    BIT4            ;INDICATES TO TX INTERRUPT ROUTINE
2311                                                    ;THAT IT IS TIME TO TRANSMIT BODY OF MSG.
2312    000040                  RXM=    BIT5            ;INDICATES TO RX INTERUPPT ROUTINE
2313                                                    ;THAT IT IS TIME TO REC MSG BODY
2314    000400                  BCC=    BIT8            ;TIME FOR CRC CHECK.
2315
2316    001000                  PAD=    BIT9            ;INDICATES THAT PAD MUST BE SENT
2317
2318    002000                  INOVR=  BIT10           ;INIT OVER
2319
2320    004000                  FIRST=  BIT11           ;FIRST  TIME FOR CTS
2321
2322                    ; SPECIAL CLI CODES FOR "CHAR" ARGUMENT IN CLI CALLS
2323                    ;  (COMMAND LINE INTERPRETER DEFINITIONS)
2324    000000                  CLIERR= 0
2325    000001                  CLIEXI= 1
2326    000002                  CLIBR=  2
2327    000003                  CLIBIF= 3
2328    000004                  CLISPA= 4
2329    000005                  CLINUM= 5
2330    000006                  CLIALP= 6
2331    000007                  CLIALN= 7
2332    000010                  CLIOCT= 8.
2333    000011                  CLIDEC= 9.
2334    000012                  CLISTR= 10.
2335
2336                    ; DEFS FOR COMMAND LINE INTERPRETATION ACTION VALUES
2337    000000                  NULL=0
2338    000001                  CLEAR=1
2339    000002                  SHOW=2
2340    000003                  CHECK=3
2341    000004                  RUN=4
2342    000005                  HLP=5
2343    000006                  CSHEXP=6
2344    000007                  CSHTRN=7
2345    000010                  SETEXP=10
2346    000011                  SETTRN=11
```

```
2347            000012                  SIZE=12
2348            000013                  QCOPY=13
2349            000014                  NUM=14
2350            000015                  OPRMSG=15
2351            000016                  STATUS=16
2352            000017                  ENDQO=17
2353            000020                  CMSG0=20
2354            000021                  CMSG1=21
2355            000022                  CMSG2=22
2356            000023                  CMSG3=23
2357            000024                  CMSG4=24
2358            000025                  CMSG5=25
2359            000026                  CMSG6=26
2360            000027                  ATVMOD=27
2361            000030                  PASMOD=30
2362            000031                  RECMOD=31
2363            000032                  LISMOD=32
2364            000033                  DLLMOD=33
2365            000034                  TRAMOD=34
2366            000035                  TALMOD=35
2367            000036                  NO=36
2368            000037                  ECHO=37
2369            000040                  CRC=40
2370            000041                  PROTO=41
2371            000042                  PASC=42
2372            000043                  MOP=43
2373            000044                  TTLLOP=44
2374            000045                  CBLLOP=45
2375            000046                  LMDLOP=46
2376            000047                  RMDLOP=47
2377            000050                  NOTNUF=50
2378            000051                  BADCHR=51
2379            000052                  DMPS=52
2380            000053                  DMPE=53
2381            000054                  DMPQ=54
2382            000055                  PRNT=55
2383            000056                  MOSC=56
2384            000057                  EXIT=57
2385            000060                  SETET=60
2386                                ;FOLLOWING EQUATES USED IN REPORT CLI
2387            000001                  RPHLP=1         ;PRINT HELP MESSAGE
2388            000002                  RPEXT=2         ;EXIT
2389            000003                  RPLOG=3         ;REPORT EVENT LOG
2390            000004                  RPERR=4         ;'COUNTER/ERROR'
2391            000005                  RPFUL=5         ;'COUNTER/FULL'
2392            000006                  RNOTNF=6        ;MORE COMMAND NEEDED
2393            000007                  RPSWO=7         ;VALIDATE OFFSET
2394
2395
2396                                ;***** DEVICE DEPENDENT EQUATES
2397                                ; MODEM SIGNAL BIT DEFINITONS
2398                                ;       IF SIGNAL AVAILABLE IN DEVICE, EQUATE NAME TO BIT POSITION,
2399                                ;       ELSE EQUATE IT TO = 0
2400
2401            020000                  CTS=    BIT13           ;CLEAR TO SEND (CIRCUIT CB)
2402            001000                  DSR=    BIT9            ;DATA SET READY (CIRCUIT CC)
```

```
2403            010000                  DCD=    BIT12           ;DATA CARRIER DETECT (CIRCUIT CF)
2404            000004                  RTS=    BIT2            ;REQUEST TO SEND (CIRCUIT CA)
2405            040000                  RI=     BIT14           ;RING INDICATOR (CIRCUIT CE)
2406            004000                  SRD=    BIT11           ;SECONDARY RECEIVE DATA
2407
2408
2409
2410
2411                                    ; DEVICE SIGNALS
2412            000002                  DTR=    BIT1            ;DATA TERMINAL READY
2413            000010                  HDPLX=  BIT3            ;HALF DUPLEX MODE
2414            000020                  RXENA=  BIT4            ;RECEIVER ENABLE
2415            000040                  DSITEN= BIT5            ;DATA SET CHANGE ENABLE
2416            000100                  RINTEN= BIT6            ;REC INT. ENABLE
2417            000200                  RXDONE= BIT7            ;REC DATA READY
2418            004000                  RXACT=  BIT11           ;REC ACTIVE
2419            000400                  RESET=  BIT8            ;MASTER RESET
2420            001000                  TXACT=  BIT9            ;TX ACTIVE
2421            000200                  TXDONE= BIT7            ;TX BUFFER EMPTY
2422            004000                  TTLL=   BIT11           ;TTL LOOP BIT(INTERNAL)
2423            010000                  CABLOP= BIT12           ;CABLE LOOP(TURN AROUND)
2424            000020                  SEND=   BIT4            ;TX ENABLE
2425            000100                  TINTEN= BIT6            ;TX INT ENABLE
2426            000400                  TSOM=   BIT8            ;TX START OF MSG.
2427            001000                  TEOM=   BIT9            ;TX END OF MSG.
2428            100000                  TERR=   BIT15           ;TX ERROR
2429            100000                  RERR=   BIT15           ;REC OVER RUN
2430            010000                  CRCOK=  BIT12           ;CRC CHAR OK
2431            100000                  DSCA=   BIT15           ;DATA SET CHANGE A
2432            000400                  STRIP=  BIT8            ;SYNC STRIP
2433            000226                  SYN=    226             ;SYNC WORD
2434
```

```
                                .SBTTL  GLOBAL DATA SECTION
                                .SBTTL          DEFAULT MESSAGE DEFINITIONS AND TABLES

                                ;++
                                ; THE GLOBAL DATA SECTION CONTAINS DATA THAT ARE USED
                                ; IN MORE THAN ONE TEST.
                                ;--

                                ;MESSAGE BYTE COUNT TABLE

002150                          DMSGCT:
002150  000001                  MSG0C:  .WORD   EMSG0-MSG0      ;BYTE COUNT OF MESSAGE #0
002152  000001                  MSG1C:  .WORD   EMSG1-MSG1      ;BYTE COUNT OF MESSAGE #1
002154  000001                  MSG2C:  .WORD   EMSG2-MSG2      ;BYTE COUNT OF MESSAGE #2
002156  000001                  MSG3C:  .WORD   EMSG3-MSG3      ;BYTE COUNT OF MESSAGE #3
002160  000100                  MSG4C:  .WORD   EMSG4-MSG4      ;BYTE COUNT OF MESSAGE #4
002162  000072                  MSG5C:  .WORD   EMSG5-MSG5      ;BYTE COUNT OF MESSAGE #5
002164  000101                  MSG6C:  .WORD   EMSG6-MSG6      ;BYTE COUNT OF MESSAGE #6
002166  000000                  OPCNT:  .WORD   0               ;BYTE COUNT FOR OPERATOR SPEC'D MSG.
002170  000001                  MSG8C:  .WORD   EMSG8-MSG8      ;BYTE COUNT OF RECEIVE BUFFER FILL PATTERN

                                ;MESSAGE ADDRESS TABLE

002172                          DMSGAD:
002172  002214                          MSG0                    ;ADDRESS OF MESSAGE #0
002174  002215                          MSG1                    ;ADDRESS OF MESSAGE #1
002176  002216                          MSG2                    ;ADDRESS OF MESSAGE #2
002200  002217                          MSG3                    ;ADDRESS OF MESSAGE #3
002202  002220                          MSG4                    ;ADDRESS OF MESSAGE #4
002204  002320                          MSG5                    ;ADDRESS OF MESSAGE #5
002206  002412                          MSG6                    ;ADDRESS OF MESSAGE #6
002210  002520                          OPBUF                   ;ADDRESS OF OPERATOR SPEC'D MSG.
002212  002642                          MSG8                    ;ADDRESS OF RECEIVE BUFFER FILL PATTERN

002214  000                     MSG0:   .BYTE   000             ;MESSAGE OF ALL 0'S
002215                          EMSG0:
002215  377                     MSG1:   .BYTE   377             ;MESSAGE OF ALL 1'S
002216                          EMSG1:
002216  252                     MSG2:   .BYTE   252             ;MESSAGE OF ALTERNATING 1'S
002217                          EMSG2:
002217  125                     MSG3:   .BYTE   125             ;MESSAGE OF ALTERNATING 0'S
002220                          EMSG3:
002220                          MSG4:                           ;"CCITT" 512-BIT (VS. 511 BITS) TEST PATTERN
002220  177603  157427  031011          .WORD   177603,157427,031011,047321,163715,105221,143325,142304
002226  047321  163715  105221
002234  143325  142304
002240  040041  014116  052606          .WORD   040041,014116,052606,172334,105025,123754,111337,111523
002246  172334  105025  123754
002254  111337  111523
002260  030030  145064  137642          .WORD   030030,145064,137642,143531,063617,135075,066730,026575
002266  143531  063617  135075
002274  066730  026575
002300  052012  053627  070071          .WORD   052012,053627,070071,151172,165044,031605,166632,016741
002306  151172  165044  031605
002314  166632  016741
002320                          EMSG4:
```

```
 2491  002320                                MSG5:                           ;"INTERPROCESSOR TEST PROGRAM'S (ITEP)" MESSAGE
 2492                                                                        ; #1, (DP1:)
 2493  002320  077577  040444  052040              .ASCII  <177><177>/$A THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG./
 2494  002326  042510  050440  044525
 2495  002334  045503  041040  047522
 2496  002342  047127  043040  054117
 2497  002350  045040  046525  042520
 2498  002356  020104  053117  051105
 2499  002364  052040  042510  046040
 2500  002372  055101  020131  047504
 2501  002400  027107
 2502  002402  005015  077401  077577              .ASCIZ  <15><12><001><177><177><177><177>
 2503  002410  000177
 2504  002412                                EMSG5:
 2505  002412                                MSG6:                           ;ALPHA-NUMERICS (OR FUTURE COMM TURNAROUND MSG)
 2506  002412  022043  021041  023040              .ASCII  /#$!" &'()*+,-.0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ/
 2507  002420  024047  025051  026053
 2508  002426  027055  030460  031462
 2509  002434  032464  033466  034470
 2510  002442  035472  036474  037476
 2511  002450  040500  041502  042504
 2512  002456  043506  044510  045512
 2513  002464  046514  047516  050520
 2514  002472  051522  052524  053526
 2515  002500  054530     132
 2516  002503     057  056133  057135              .ASCIZ  ?/[\]^_%?
 2517  002510  022537     000
 2518  002513                                EMSG6:
 2519          002514                                .EVEN
 2520
 2521                                        ; ***************************************************************************
 2522                                        ;THESE THREE STORAGE AREAS MUST NOT BE SEPERATED !!!!
 2523
 2524  002514  047045  040445               OPBFPT: .ASCII  /%N%A/
 2525  002520  000122                        OPBUF:  .BLKB   82.             ;BUFFER FOR OPERATOR SPEC'D MESSAGES
 2526  002642                                OPEND:
 2527
 2528                                        ; THE ABOVE THREE LINES MUST BE KEPT TOGETHER
 2529                                        ; ***************************************************************************
 2530
 2531  002642     033                        MSG8:   .BYTE   33              ;RECEIVE BUFFER FILL PATTERN
 2532  002643                                EMSG8:
 2533          002644                                .EVEN
```

```
                                ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
                                ; THE FOLLWING IS THE AREA USED TO TRANSMIT AND REC THE ;
                                ; HEADER MSGS. AND THE START,STACK ACK SEQUENCES.       ;
                                ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;

                                ;; THE TRANSMIT HEADER MESSAGE WILL BE STORED HERE
002644     000                  HDMSG:  .BYTE 0         ;FILLER
002645     201                  HDMID:  .BYTE 201       ;MESSAGE TYPE WILL BE STORED HERE
002646                          HDMTYP:                 ;IF CONTROL MESSAGE, TYPE IS STORED HERE
002646  000000                  HDMCC:  .WORD   0       ;CHAR COUNT GOES HERE
002650     001                  HDMREP: .BYTE   1       ;RESPONSE NUMBER
002651     001                  HDMNUM: .BYTE   1       ;MSG. NUMBER
002652     001                  HDMADR: .BYTE   1       ;ADDR TO.
002653                          HSMSE:
        002654                          .EVEN
002654  000006                  HDMC:   .WORD   6       ;CHARACTER COUNT OF HEADER

                                ;; THE RECEIVED HEADER WILL BE STORED HERE
002656     000                  RHDMSG: .BYTE 0
002657     201                  RHDMID: .BYTE 201       ;MESSAGE TYPE GOES HERE
002660                          RHDTYP:                 ;IF CONTROL MESSAGE, TYPE GOES HERE
002660  000000                  RHDMCC: .WORD   0       ;BYTE COUNT GOES HERE
002662     001                  RHDREP: .BYTE   1       ;RESP NUM
002663     001                  RHDNUM: .BYTE   1       ;MSG NUM
002664     001                  RHDADR: .BYTE   1       ;ADDRESS OF TRIB
        002666                          .EVEN

```

```
 2561                                   ;COMMAND LINE BUFFER, DATA LOCATIONS AND MESSAGES FOR ACTION ROUTINES
 2562
 2563  002666  000122                   CMDBUF: .BLKB   82.              ;BUFFER FOR OPERATOR COMMANDS
 2564  003010  000000                   KEYWD1: .WORD   0                ;THIS LOC WILL =1 IF CLEAR TYPED, 2 FOR SHOW,
 2565                                                                    ; A 4 IF RUN WAS TYPED, 5 IF HELP WAS TYPED
 2566  003012  000000                   QUALFG: .WORD   0                ;THIS LOC HOLDS QUALIFIER VALUE (SIZE OR COPY)
 2567  003014  000000                   QUALVL: .WORD   0
 2568  003016  012276                   HLPTAB: .WORD   HLP1
 2569  003020  012311                           .WORD   HLP2
 2570  003022  012426                           .WORD   HLP3
 2571  003024  012513                           .WORD   HLP3A
 2572  003026  012540                           .WORD   HLP4
 2573  003030  012617                           .WORD   HLP4A
 2574  003032  012675                           .WORD   HLP5
 2575  003034  012776                           .WORD   HLP6
 2576  003036                         HLPEND:
 2577                                   ;INDEX TABLE FOR REPORT 'RPT>' HELP MESSAGES
 2578  003036  013133                   RHLPTB: .WORD   RHLP1
 2579  003040  013155                           .WORD   RHLP2
 2580  003042  013210                           .WORD   RHLP3
 2581  003044  013241                           .WORD   RHLP4
 2582  003046  013273                           .WORD   RHLP5
 2583  003050  013336                           .WORD   RHLP6
 2584  003052                         RHLPEN:
 2585
 2586  003052  013552  013561  013566  SHTYTB: .WORD   SHTYP0,SHTYP1,SHTYP2,SHTYP3,SHTYP4,SHTYP5,SHTYP6,SHTYP7
 2587  003060  013573  013600  013606
 2588  003066  013613  013621
 2589
 2590                                   ; THE LIST OF BYTES BELOW ARE THE FIRST BYTES OF THE PREDEFINED MESSAGES
 2591                                   ;  USED TO "SHOW" THE TRANSMIT AND COMPARE BUFFER CONTENTS.
 2592
 2593  003072     000     377     252  SHTAB:  .BYTE   0,377,252,125,203,177,043
 2594  003075     125     203     177
 2595  003100     043
 2596  003101                         SHTEND:
 2597          003102                           .EVEN
 2598
 2599  003102  013632                   MODES:  .WORD   M00      ;ADDRESSES OF MODE TYPES IN ASCII
 2600  003104  013642                           .WORD   M01
 2601  003106  013653                           .WORD   M02
 2602  003110  013663                           .WORD   M03
 2603  003112  013672                           .WORD   M04
 2604  003114  013707                           .WORD   M05
 2605  003116  013714                           .WORD   M06
 2606
 2607  003120  013723                   LOOPS:  .WORD   LP0      ;ADDRESSES OF LOOP TYPES IN ASCII
 2608  003122  013733                           .WORD   LP1
 2609  003124  013744                           .WORD   LP2
 2610  003126  013752                           .WORD   LP3
 2611  003130  013765                           .WORD   LP4
 2612
 2613                                   ;COMMAND LINE TRAVERSE LOCATIONS (USED BY 'P$TRV')
 2614
 2615  003132  000000                   P$BUFA: .WORD   0                ;LOC. TO HOLD ADDR. OF CMD LINE BUFFER
 2616  003134  000000                   P$TREE: .WORD   0                ;LOC. TO HOLD ADDR. OF PARSING TREE
```

```
 2617  003136  000000                P$ACT:  .WORD   0               ;LOC. TO HOLD ADDR. OF ACTION ROUTINE
 2618  003140  000000                P$CNT:  .WORD   0               ;LOC. TO BE A COUNTER LOCATION
 2619  003142  000000                P$NUM:  .WORD   0               ;LOC. TO HOLD NUMERIC VALUE FROM PARSE
 2620  003144  000000                P$RADX: .WORD   0               ;LOC. TO HOLD RADIX USED(1,0) AND +/-(HI BYTE)
 2621  003146     000                P$NNUF: .BYTE   0               ;RETURN =0 IF ENOUGH OF COMMAND FOUND
 2622  003147     000                P$GDBD: .BYTE   0               ;RETURN CODE 0 IF NO ERROR FOUND
 2623
```

```
                                .SBTTL          MESSAGE BUFFERS AND POINTER TABLES

003150  001000  TXBUF:  .BLKB   BUFLIM  .TRANSMITTER BUFFERS
004150  001000  RXBUF:  .BLKB   BUFLIM  ;RECEIVER BUFFERS
005150  001000  CMPBUF: .BLKB   BUFLIM  ;COMPARISON BUFFERS
006150  000036  PTRTAB: .BLKW   MSGLIM*2        ;TABLE FOR MESSAGE ADDRS. & BYTE COUNTS
006244  000036  PTR13:  .BLKW   MSGLIM*2
006340  000036  PTR23:  .BLKW   MSGLIM*2
006434          PTREND:                 ; END OF MSG. PTR. TABLE

006434  000002          .BLKW   2       ;FILLER FOR OVERFLOW OF RX POINTER TABLE

006440  000000  RXPTR:  .WORD   0       ;RECEIVER MESSAGE POINTER
006442  000000  TXPTR:  .WORD   0       ;TRANMITTER BUFFER POINTER
006444  000000  CMPPTR: .WORD   0       ;COMPARISON BUFFER POINTER
006446  000000  CMPTOT: .WORD   0       ;CMP MSG TOTAL
006450  000000  CTOTCC: .WORD   0       ;COMPARE BUFFER CHAR. COUNT
006452  000000  CCURAD: .WORD   0       ;CURRENT ADDR OF CMP BUFF TO ADD AT

006454  000000  DVTXA:  .WORD   0       ;DEVICE TX ADDR
006456  000000  DVTCC:  .WORD   0       ;DEVICE TX CHAR COUNT
006460  000000  DVTCT:  .WORD   0       ;DEVICE TX MESSAGE COUNT
006462  000000  TXMTOT: .WORD   0       ;TX MSG TOTAL
006464  000000  TTOTCC: .WORD   0       ;TX BUFFER CHAR. COUNT
006466  000000  TCURAD: .WORD   0       ;CURRENT ADDR. OF TX BUFF TO ADD AT

006470  000000  DVRXA:  .WORD   0       ;DEVICE RX ADDR
006472  000000  DVRCC:  .WORD   0       ;DEVICE RX CHAR COUNT
006474  000000  DVRCT:  .WORD   0       ;DEVICE RX MESSAGE COUNT
006476  000000  RXMTOT: .WORD   0       ;RX MSG TOTAL

006500  000000  LNCNT:  .WORD   0       ;NUMBER OF OPERATOR AWAKE MSGS
006502  000000  OPVAR:  .WORD   0       ;OPTTIONAL VARIABLE LOCATION
006504  000000  PSCNT:  .WORD   0       ;PASS COUNTER
006506  000000  ERRCNT: .WORD   0       ;ERROR COUNTER
006510  000000  STADD:  .WORD   0       ;START ADDR.
006512  000000  ENADD:  .WORD   0       ;END ADDR. FOR DUMP
006514  000000  BYTBIT: .WORD   0       ;BYTE BIT FOR DUMP ROUTINE

                        ;OTHER MESSSAGE RELATED STORAGE LOCATIONS

006516  000000  MSGTYP: .WORD   0       ;TYPE OF DATA 0=0'S,1=1'S,2=10'S,3=01'S
                                        ;4=CCITT,5=QUICK FOX,6=ALPHA/NUM,7=OPER
006520  000000  CURCC:  .WORD   0       ;TX/RX/CMP CHAR COUNT
006522  000000  CPTRR:  .WORD   0       ;CURRENT RX POINTER
006524  000000  CPTR:   .WORD   0       ;CURRENT POINTER
006526  000000  CURADD: .WORD   0       ;CURRENT TX/RX/CMP START ADDD
006530  000000  TOTCC:  .WORD   0       ;TOTAL CHAR COUNT NOT MORE THEN 'BUFLIM'
006532  000000  OFSET:  .WORD   0       ;OFFSET COUNT
006534  000000  TEMP:   .WORD   0       ;TEMPORARY LOCATIONS (USED A LOT)
006536  000000  TEMP1:  .WORD   0
006540  000000  TEMP2:  .WORD   0
006542  000000  TEMP3:  .WORD   0
006544  000000  TEMP4:  .WORD   0
006546  000000  TEMP5:  .WORD   0
006550  000000  CONOTM: .WORD   0       ;CONTROL OUT ERROR MSG. ADDRESS
```

```
 2680  006552  000000                CONTIN: .WORD   0       ;WORD FOR CONTROL IN
 2681  006554     000                GOOD:   .BYTE   0       ;BYTE TO HOLD EXPECTED MESSAGE DATA BYTE FOR ERR REPORT
 2682  006555     000                BAD:    .BYTE   0       ;BYTE TO HOLD RECEIVED MESSAGE DATA BYTE FOR ERR REPORT
 2683  006556  000000                DATAWORD:.WORD  0       ;STORAGE LOCATION FOR TRANSMIT DATA
 2684
```

```
2685                                    ;MORE INDEPENDENT CODE STORAGE LOCATIONS
2686
2687  006560  000000                    LOGUNT: .WORD   0       ;LOC. TO HOLD LOGICAL UNIT NUMBER
2688  006562  000000                    PCADD:  .WORD   0       ;LOC. HOLD PC OF CALLING ROUTINE
2689  006564  000000                    DCLFLG: .WORD   0       ;CLEANUP & EXIT FLAG -1 = EXIT TEST
2690  006566  000000                    RESFLG: .WORD   0       ;LOC TO HOLD FLAG (-1) THAT A RESTART WAS GIVEN
2691  006570  000000                    MODTYP: .WORD   0       ;DCLT MODE OF OPERATION TYPE
2692                                                            ;  (0=REC-ONLY, 1=TX-ONLY, 2=PASSIVE-LOOPBK,
2693                                                            ;   3=ACTIVE-LOOPBK, 4=DOWN L.L., 5=TALK, 6=LISTEN)
2694  006572  000000                    MLTYP:  .WORD   0       ;MAINTENANCE LOOP TYPE (0=NONE, 1=INTERNAL TTL,
2695                                                            ;  2=CABLE, 3=MODEM-ANALOG LOOPBK (LOCAL),
2696                                                            ;  4=MODEM-DIGITAL LOOPBK (REMOTE), 5=MOP)
2697  006574  000000                    FHDPLX: .WORD   0       ;FULL OR HALF DUPLEX FLAG (1=FULL FROM P-TABLE)
2698  006576  000002                    PARAM:  .WORD   2       ;PROGRAM PARAMETERS
2699                                                            ; BIT0= STATUS MSGS TO OPR PRINTED (1=YES)
2700                                                            ; BIT1= DATA CHECKING DONE ON RCVD MSGS (1=YES)
2701                                                            ; BIT2= ECHO (TRANSMIT) RCV'D MSG.(PASSIVE)(1=YES)
2702                                                            ; BIT3= MODEM STATUS CHECK (1=YES)
2703                                                            ; BIT4= CRC CALC./CHECK DONE (1=YES)
2704                                                            ; BIT5= PROTOCOL EMULATION (1=YES)
2705                                                            ; BIT6= PROTOCOL IS RUNNING
2706                                                            ; BIT7= FATAL FAULT IN PROTOCOL--ABORTING!!
2707
2708  006600  000000                    RPASS:  .WORD   0       ;PASS NUMBER FROM RUN COMMAND
2709  006602  000000                    FLAG:   .WORD   0       ;DEVICE FLAG WORD
2710
2711                                    ;MODE DISPATCH TABLE
2712  006604  032210                    MODE:   .WORD   RXONLY  ;RX ONLY DISPATCH
2713  006606  032242                            .WORD   TXONLY  ;TX ONLY DISPATCH
2714  006610  032302                            .WORD   PLCK    ;PASSIVE LOOP BACK DISP
2715  006612  032336                            .WORD   ALCK    ;ACTIVE LOOP BACK DISP
2716  006614  033570                            .WORD   DLL     ;DOWN LINE LOAD DISP
2717  006616  033614                            .WORD   TALCK   ;TALK MODE DISPATCH
2718  006620  034060                            .WORD   LISCK   ;LISTEN MODE DISPATCH
2719
2720
2721                                    .SBTTL          CLOCK TABLES, EVENT LOG AND POINTERS
2722  006622  000000                    CLKCSR: .WORD   0       ;CLOCK CSR ADDRESS
2723  006624  000000                    CLKBR:  .WORD   0       ;CLOCK INTERRUPT LEVEL
2724  006626  000000                    CLKVEC: .WORD   0       ;CLOCK INTERRUPT VECTOR
2725  006630  000074                    CLKHZ:  .WORD   60.     ;CLOCK'S HERTZ RATE
2726  006632  000000                    CLKEN:  .WORD   0       ;CLOCK'S CSR VALUE TO INTRPT. ENABLE IT
2727
2728  006634  000000                    TIMMIN: .WORD   0       ;PLACE TO KEEP TIME-SINCE-START
2729  006636  000000                    TIMSEC: .WORD   0
2730  006640  000000                    TIMTCK: .WORD   0       ;PLACE TO KEEP # OF TICKS/SEC
2731
2732  006642  000000                    TIMER1: .WORD   0       ;EVENT TIMER #1 (TICKS)
2733  006644  000000                    TIMER2: .WORD   0       ;EVENT TIMER #2 (TICKS)
2734  006646  000000                    TIMERS: .WORD   0       ;EVENT TIMER #3 (SECONDS)
2735
```

```
 2736                                   ;EVENT LOG TABLE AND ITS NEXT ENTRY POINTER
 2737  006650  006652                   EVTPTR: .WORD   EVTLOG  ;POINTER TO NEXT FREE SPACE IN EVENT LOG
 2738  006652  000341                   EVTLOG: .BLKW   225.    ;EVENT LOG BUFFER
 2739  007554  000001                   EVTEND: .BLKW   1.      ;APPROXIMATE END OF EVENT TABLE (ALLOWS CIRCULAR QUE)
 2740
 2741                                   .SBTTL          MODEM DATA SECTION
 2742
 2743  007556  000000                   MODS:   .WORD   0       ;MODEM STATUS
 2744
 2745
```

```
2746
2747                                    ;TABLE OF MODEM SIGNAL BIT DEFINITIONS
2748
2749  007560  020000                    MOBITS: .WORD   CTS             ;CLEAR TO SEND (CIRCUIT CB)
2750  007562  001000                            .WORD   DSR             ;DATA SET READY (CIRCUIT CC)
2751  007564  010000                            .WORD   DCD             ;DATA CARRIER DETECT (CIRCUIT CF)
2752  007566  000004                            .WORD   RTS             ;REQUEST TO SEND (CIRCUIT CA)
2753  007570  040000                            .WORD   RI              ;RING INDICATOR (CIRCUIT CE)
2754  007572  004000                            .WORD   SRD             ;SECONDARY RECEIVE DATA (CIRCUIT SBB)
2755  007574                          MOBITE:
2756
2757                                    ;TABLE OF ADDRESSES OF MODEM SIGNAL MESSAGE POSITIONS
2758
2759  007574  016502                    MOMSGS: .WORD   EVMCTS           ;CLEAR TO SEND (CIRCUIT CB)
2760  007576  016506                            .WORD   EVMDSR           ;DATA SET READY (CIRCUIT CC)
2761  007600  016512                            .WORD   EVMDCD           ;DATA CARRIER DETECT (CIRCUIT CF)
2762  007602  016516                            .WORD   EVMRTS           ;REQUEST TO SEND (CIRCUIT CA)
2763  007604  016522                            .WORD   EVMRI            ;RING INDICATOR (CIRCUIT CE)
2764  007606  016526                            .WORD   EVMSRD           ;SECONDARY RECEVIE DATA
2765
2766                                    ;TABLE OF ADDRESSES OF EVENT DESCRIPTION MESSAGES
2767                                    ;       ORDER CORRESPONDS TO MESSAGE TYPE VALUES
2768
2769  007610  015107                    EVTLST: .WORD   EDTXQ   ;TRANSMIT MESSAGE QUEUED
2770  007612  015133                            .WORD   EDTXC   ;TRANSMIT OF MESSAGE COMPLETE
2771  007614  015162                            .WORD   EDRXQ   ;RECEIVE MESSAGE SPACE QUEUED
2772  007616  015207                            .WORD   EDRXC   ;MESSAGE RECEIVED - RECEIVE COMPLETE
2773  007620  015235                            .WORD   EDDER   ;DEVICE INFORMATION
2774  007622  015302                            .WORD   EDDVI   ;DEVICE INITIALIZE STARTED
2775  007624  015252                            .WORD   EDDCK   ;DATA COMPARISON DONE
2776  007626  015434                            .WORD   EDMOS   ;MODEM STATUS CHANGE
2777  007630  015330                            .WORD   EDDLE   ;DATA COMPARE LENGTH ERROR
2778  007632  015365                            .WORD   EDDDE   ;DATA COMPARE DATA ERROR
2779  007634  015420                            .WORD   EDEOP   ;END OF PASS
2780  007636  015460                            .WORD   EDABO   ;^C ABORT
2781
2782                                  ;LOCATIONS USED DURING EVENT REPORTING
2783
2784  007640  000000                  EVTSEC: .WORD   0       ;TEMPORARY LOCS TO KEEP EVENT TIME WHILE REPORTING
2785  007642  000000                  EVTMIN: .WORD   0
2786  007644  000000                  EVTTCK: .WORD   0
2787  007646  000000                  EVTADD: .WORD   0       ;TEMP. LOC. TO HOLD ADDRESS DURING EVENT REPORTING
2788  007650  000000                  EVTBCT: .WORD   0       ;       ''      ''  BYTE COUNT   ''      ''      ''
2789  007652  000000                  EVTTMP: .WORD   0       ;       ''      ''  OTHER DATA   ''      ''      ''
2790
2791                                  ;REPORT CODING DISPATCH TABLE
2792
2793  007654  022300                  RPTDSP: .WORD   RPTTXQ  ;TRANSMIT QUEUED ENTRY DECODING
2794  007656  022300                          .WORD   RPTTXQ  ;TRANSMIT COMPLETE ENTRY DECODING
2795  007660  022300                          .WORD   RPTTXQ  ;RECEIVER QUEUED ENTRY DECODING
2796  007662  022300                          .WORD   RPTTXQ  ;RECEIVER COMPLETE ENTRY DECODING
2797  007664  022352                          .WORD   RPTDER  ;DEVICE ERROR ENTRY DECODING
2798  007666  022446                          .WORD   RPTDVI  ;DEVICE INIT ENTRY DECODING
2799  007670  022642                          .WORD   RPTDCK  ;DATA COMPARISON ENTRY DECODING
2800  007672  022716                          .WORD   RPTMSC  ;REPORT MODEM STATUS CHANGE
2801  007674  022642                          .WORD   RPTDLE  ;DATA COMPARISON LENGH ERROR
```

```
 2802  007676  022566                    .WORD   RPTDDE  ;DATA COMPAPISON DATA ERROR
 2803  007700  022512                    .WORD   RPTEOP  ;END OF PASS
 2804  007702  022512                    .WORD   RPTABO  ;^C ABORT
 2805
 2806  007704  000000            DEV1:   .WORD   0               ;TEMP LOCS TO HOLD DATA FOR EVENT REPORTING
 2807  007706  000000            DEV2:   .WORD   0               ;  AND SHOW MODE,... SUBROUTINE
 2808  007710  000000            DEV3:   .WORD   0
 2809  007712  000000            DEV4:   .WORD   0
 2810
```

```
                        .SBTTL          COMMAND LINE ACTION TREE

                        ;SAMPLE CLI TREE NODE   (ALWAYS AT LEAST 1 WORD)
                        ; ----------------------
                        ; ! ACTION  ! CHAR CODE !
                        ; ----------------------
                        ; !  MISS DISPLACEMENT  !       ONLY IF 'MISS' ARGUMENT DEFINED
                        ; ----------------------
                        ; ! NEXT NODE DISPLMNT  !       ONLY IF 'ASCII' ARGUMENT DEFINED
                        ; ----------------------
                        ; ! ASCIZ MATCH STRING  !       ONLY IF 'ASCII' ARGUMENT DEFINED
                        ; !             (.EVEN) !
                        ; ----------------------

007714                  CLITRE:

                        ;FIRST KEYWORD
007714                          CLI     CLISPA,0,N10$                   ;SKIP ANY LEADING SPACES
007720                  N10$:   CLI     <'?>,HLP,N42$                   ;IS THE FIRST NON-SP CHAR A '?'
007724                          CLI     CLIEXI,0                        ;  IF YES DO 'HLP' AND EXIT
007726                  N42$:   CLI     CLISTR,HLP,N43$,<'HELP'>        ;ELSE, IS FIRST WORD A 'HELP'
007742                          CLI     CLIEXI,0                        ;  IF YES DO 'HLP' AND EXIT
007744                  N43$:   CLI     CLISTR,PRNT,N44$,<'PRINT'>      ;ELSE, IS FIRST WORD A 'PRINT'
007760                          CLI     CLIEXI,0                        ;  IF YES DO 'PRINT' AND EXIT
007762                  N44$:   CLI     CLISTR,EXIT,N45$,<'EXIT'>       ;ELSE, IS FIRST WORD 'EXIT'
007776                          CLI     CLIEXI,0                        ;  IF YES DO 'EXIT' AND EXIT
010000                  N45$:   CLI     CLISTR,RUN,N46$,<'RUN'>         ;ELSE, IS FIRST WORD A 'RUN'
010012                          CLI     CLIBR,0,N80$                    ;  IF YES DO 'RUN' & GOTO N80$
010016                  N46$:   CLI     CLISTR,NOTNUF,N40$,<'DUMP'>     ;ELSE, IS FIRST WORD A 'DUMP'
010032                          CLI     CLIBR,0,N50$                    ;  IF YES GOTO N80$
010036                  N40$:   CLI     CLISTR,CLEAR,N20$,<'CLEAR'>     ;ELSE, IS FIRST WORD A 'CLEAR'
010052                          CLI     CLIBR,NOTNUF,N100$              ;  IF YES DO 'CLR' & GOTO N100$
010056                  N20$:   CLI     <'S>,NOTNUF,N30$                ;ELSE, IS FIRST CHAR. A 'S'
010062                          CLI     CLISTR,SHOW,N25$,<'HOW'>        ;  IF YES IS REST OF WORD 'HOW'
010074                          CLI     CLIBR,0,N100$                   ;    IF YES, DO 'SHOW',BR N100$
010100                  N25$:   CLI     CLISTR,0,N30$,<'ET'>            ;  ELSE, IS REST OF WORD 'ET'
010112                          CLI     CLIBR,0,N110$                   ;    IF YES, DO 'SET', BR N110$
010116                  N30$:   CLI     CLIERR,0                        ;OTHERWISE 'ILL CMD' - EXIT

                        ;SECOND KEYWORD (MODE=) FOR RUN COMMAND

010120                  N80$:   CLI     CLISPA,0,N30$                   ;SKIP LEADING SPS, IF NONE-ERR
010124                  N81$:   CLI     CLISTR,NOTNUF,N30$,<'MODE'>     ;IS NEXT WORD 'MODE='
010140                          CLI     <'=>,0,N30$                     ;  IF NO, IT'S WRONG -ERR -EXIT
010144                          CLI     CLISTR,ATVMOD,N82$,<'ACTIVE'>   ;IS NEXT WORD 'ACTIVE'
010162                          CLI     CLIBR,0,N115$                   ;  IF YES, DO 'ACTIVE',BR N115$
010166                  N82$:   CLI     CLISTR,PASMOD,N83$,<'PASSIVE'>  ;IS NEXT WORD 'PASSIVE'
010204                          CLI     CLIBR,0,N115$                   ;  IF YES, DO 'PASSVE',BR N115$
010210                  N83$:   CLI     CLISTR,RECMOD,N84$,<'RECEIVE'>  ;IS NEXT WORD 'RECEIVE'
010226                          CLI     CLIBR,0,N115$                   ;  IF YES, DO 'RECVE',BR N115$
010232                  N84$:   CLI     CLISTR,LISMOD,N85$,<'LISTEN'>   ;IS NEXT WORD 'LISTEN'
010250                          CLI     CLIBR,0,N115$                   ;  IF YES, DO 'LISTEN',BR N115$
010254                  N85$:   CLI     CLISTR,DLLMOD,N86$,<'DOWNLINELOAD'>     ;IS NEXT WORD 'DOW...'
010300                          CLI     CLIBR,0,N115$                   ;  IF YES, DO 'DWNLL',BR N115$
010304                  N86$:   CLI     <'T>,0,N30$                     ;IS NEXT CHAR A 'T'
```

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2867  010310                        CLI     CLISTR,TRAMOD,N87$,<'RANSMIT'>  ; IS REST OF WORD 'RANSMIT''
2868  010326                        CLI     CLIBR,0,N115$                   ;  IF YES, DO 'TRANSM',BR N115$
2869  010332                N87$:   CLI     CLISTR,TALMOD,N30$,<'ALK'>      ; IS REST OF WORD ''ALK''
2870  010344                        CLI     CLIBR,0,N115$                   ;  IF YES, DO 'TALK',BR N115$
2871                                                                        ; IF NO, ERROR - EXIT
2872
2873                                ;SECOND KEYWORD (FOR CLEAR OR SHOW)
2874  010350                N100$:  CLI     CLISPA,0,N30$                   ;SKIP LEADING SPACES, NONE=ERR
2875  010354                N102$:  CLI     CLISTR,CSHEXP,N104$,<'EXPECTBUFF'>      ;IS NEXT WORD 'EXPE...'
2876  010376                        CLI     CLIEXI,0                                ; IF YES, DO CLR-EXP,EXIT
2877  010400                N104$:  CLI     CLISTR,CSHTRN,N30$,<'TRANSMITBUFF'>     ;IS NEXT WORD 'TRANS..'
2878  010424                        CLI     CLIEXI,0                                ; IF YES, DO CLR-TRN,EXIT
2879                                                                                ;IF NO - ERROR - EXIT
2880
2881
2882                                ;SECOND KEYWORD (FOR SET)
2883  010426                N110$:  CLI     CLISPA,0,N30$
2884  010432                N111$:  CLI     CLISTR,SETEXP,N112$,<'EXPECT'>
2885  010450                        CLI     CLIBR,0,N120$
2886  010454                N112$:  CLI     CLISTR,SETTRN,N30$,<'TRANSMIT'>
2887  010474                        CLI     CLIBR,0,N120$
2888
2889                                ;GET ADDRESSES FOR DUMP COMMAND
2890  010500                N50$:   CLI     CLIALP,0,N51$
2891  010504                N51$:   CLI     CLISPA,0,N52$
2892  010510                N52$:   CLI     CLIOCT,DMPS,N30$
2893  010514                        CLI     <'->,NOTNUF,N125$
2894  010520                        CLI     CLIOCT,DMPE,N30$
2895  010524                        CLI     <'/>,NOTNUF,N125$
2896  010530                        CLI     <'B>,DMPQ,N30$
2897  010534                        CLI     CLIBR,0,N125$
2898
2899                                ;QUALIFIERS FOR THE RUN COMMAND
2900  010540                N115$:  CLI     CLIALP,0,N114$
2901  010544                N114$:  CLI     <'/>,NOTNUF,N125$
2902  010550                        CLI     CLISTR,NO,N116$,<'NO'>
2903  010562                N116$:  CLI     <'C>,0,N117$
2904  010566                        CLI     CLISTR,CHECK,N117$,<'HECK'>
2905  010602                        CLI     CLIBR,0,N115$
2906
2907
2908  010606                N117$:  CLI     CLISTR,STATUS,N118$,<'STATUS'>
2909  010624                        CLI     CLIBR,0,N115$
2910  010630                N118$:  CLI     CLISTR,ECHO,N119$,<'ECHO'>
2911  010644                        CLI     CLIBR,0,N115$
2912
2913  010650                N119$:  CLI     <'P>,0,N132$
2914  010654                        CLI     CLISTR,PROTO,N130$,<'ROTOCOL'>
2915  010672                        CLI     CLIBR,0,N115$
2916  010676                N130$:  CLI     CLISTR,0,N30$,<'ASS'>
2917  010710                        CLI     CLIBR,0,N150$
2918
2919  010714                N132$:  CLI     CLISTR,MOSC,N131$,<'MODEM'>
2920  010730                        CLI     CLIBR,0,N115$
2921
2922  010734                N131$:  CLI     CLISTR,0,N30$,<'LOOP'>
```

```
 2923  010750                          CLI     CLIBR,0,N140$
 2924
 2925                                  ;GET MESSAGE TYPE FOR SET MESSAGE COMMANDS
 2926  010754                          N120$:  CLI     <'=>,0,N30$
 2927
 2928                                  ;   LOOK FOR DEFAULT MESSAGE NAME
 2929  010760                          N60$:   CLI     CLISTR,CMSG1,N61$,<'ONES'>
 2930  010774                                  CLI     CLIBR,0,N121$
 2931  011000                          N61$:   CLI     CLISTR,CMSG0,N62$,<'ZEROES'>
 2932  011016                                  CLI     CLIBR,0,N121$
 2933  011022                          N62$:   CLI     CLISTR,CMSG2,N63$,<'1ALT'>
 2934  011036                                  CLI     CLIBR,0,N121$
 2935  011042                          N63$:   CLI     CLISTR,CMSG3,N64$,<'0ALT'>
 2936  011056                                  CLI     CLIBR,0,N121$
 2937  011062                          N64$:   CLI     CLISTR,CMSG5,N65$,<'ITEP'>
 2938  011076                                  CLI     CLIBR,0,N121$
 2939  011102                          N65$:   CLI     CLISTR,CMSG4,N66$,<'CCITT'>
 2940  011116                                  CLI     CLIBR,0,N121$
 2941  011122                          N66$:   CLI     CLISTR,CMSG6,N67$,<'ALPHA'>
 2942  011136                                  CLI     CLIBR,0,N121$
 2943  011142                          N67$:   CLI     CLISTR,SETET,N68$,<'TRANSMIT'>
 2944  011162                                  CLI     CLIBR,0,N125$
 2945                                  ;   LOOK FOR QUOTED MESSAGE
 2946  011166                          N68$:   CLI     <''>,OPRMSG,N30$
 2947  011172                          N70$:   CLI     <''>,ENDQQ,N71$
 2948  011176                                  CLI     CLIBR,0,N121$
 2949  011202                          N71$:   CLI     CLISPA,0,N72$
 2950  011206                          N72$:   CLI     CLIALN,0,N73$           ;ONLY A-Z,SP,TAB, OR 0-9 BETWEEN '"S
 2951  011212                                  CLI     CLIBR,0,N70$
 2952  011216                          N73$:   CLI     CLIERR,BADCHR           ;PRINT ERROR IF NONE LEGAL CHAR FOR '"S
 2953
 2954                                  ;GET QUALIFIERS (SIZE OR COPY) FOR SET MESSAGE COMMANDS
 2955  011220                          N121$:  CLI     CLIALP,0,N123$
 2956  011224                          N123$:  CLI     <'/>,NOTNUF,N125$
 2957  011230                                  CLI     CLISTR,SIZE,N122$,<'SIZE'>
 2958  011244                                  CLI     CLIBR,0,N126$
 2959  011250                          N122$:  CLI     CLISTR,QCOPY,N30$,<'COPY'>
 2960  011264                                  CLI     CLIBR,0,N126$
 2961
 2962                                  ;NUMER FOR SIZE OR COPY
 2963  011270                          N126$:  CLI     <'=>,0,N30$
 2964  011274                                  CLI     CLIDEC,NUM,N30$
 2965  011300                                  CLI     CLIBR,0,N121$
 2966
 2967                                  ;GET MAINTENANCE LOOP TYPE FOR RUN 'LOOP" QUIALIFIER
 2968  011304                          N140$:  CLI     <'=>,0,N30$
 2969
 2970
 2971  011310                          N141$:  CLI     CLISTR,TTLLOP,N142$,<'INTERNALTTL'>
 2972  011332                                  CLI     CLIBR,0,N115$
 2973  011336                          N142$:  CLI     CLISTR,CBLLOP,N143$,<'CABLE'>
 2974  011352                                  CLI     CLIBR,0,N115$
 2975  011356                          N143$:  CLI     CLISTR,LMDLOP,N144$,<'LOCALMODEM'>
 2976  011400                                  CLI     CLIBR,0,N115$
 2977  011404                          N144$:  CLI     CLISTR,RMDLOP,N30$,<'REMOTEMODEM'>
 2978  011426                                  CLI     CLIBR,0,N115$
```

```
 2979
 2980                                ;GET LINE NUMBER FOR "PASS" RUN QUALIFIER
 2981  011432                        N150$:  CLI     <'=>,0,N30$
 2982  011436                                CLI     CLIDEC,PASC,N30$
 2983  011442                                CLI     CLIBR,0,N115$
 2984
 2985
 2986
 2987                                ;END-OF-LINE
 2988  011446                        N125$:  CLI     CLIEXI,0
 2989
```

```
 2990
 2991
 2992                                ;DEVICE DEPENDENT STORAGE LOCATIONS FOR
 2993                                ;  CURRENT DEVICE PARAMTERS
 2994
 2995
 2996  011450  000000                RXCSR:  .WORD   0               ;RECEIVE STATUS REGISTER
 2997  011452  000000                PARCSR: .WORD   0               ;STATUS REGISTER
 2998  011454  000000                RXDBUF: .WORD   0               ;RECEIVE DATA BUFFER
 2999  011456  000000                TXCSR:  .WORD   0               ;TRANSMIT STATUS REGISTER
 3000  011460  000000                TXDBUF: .WORD   0               ;TRANSMIT DATA BUFFER
 3001
 3002
 3003  011462  000000                INVEC:  .WORD   0               ;INPUT INTERRUPT VECTOR ADDRESS
 3004  011464  000000                OUTVEC: .WORD   0               ;OUTPUT INTERRUPT VECTOR ADDRESS
 3005  011466  000000                INTPRI: .WORD   0               ;INTERRUPT PRIORITY
 3006
 3007
 3008  011470  100226                DUPPAR: .WORD   100226          ;THIS WORD IS BROKEN DOWN AS FOLLOWS
 3009                                                                ;BITS 0-7 =SYNC WORD
 3010                                                                ;BIT 9 = CRC ENABLE
 3011
 3012                                                                ;BIT 15 = DDCMP MODE
 3013
 3014
 3015  011472  000000                CMODS:  .WORD   0               ;CURRENT MODEM
 3016  011474  000000                IRXCSR: .WORD   0               ;IMAGE OF RXCSR
 3017  011476  000000                IRXDBUF:.WORD   0               ;IMAGE OF RXDBUF
 3018  011500  000000                MSGPTR: .WORD   0               ;MSG PTR.FOR HEADER OR CONTROL
 3019  011502  000000                MSGCC:  .WORD   0               ;MSG COUNTER OR CC
 3020  011504  000000                SYNCC:  .WORD   0               ;SYNC CHAR COUNT.
 3021  011506  000000                SYNCW:  .WORD   0               ;SYNC WORD.PLUS TSOM BIT.
 3022  011510  000000                RMSGPT: .WORD   0               ;MSG PTR FOR REC
 3023  011512  000000                RMSGCC: .WORD   0               ;CHAR COUNTER FOR REC
 3024  011514  000000                BCCW:   .WORD   0               ;CRC HOLDING LOC.
 3025  011516  000000                MGLCNT: .WORD   0               ;COUNT OF GLITCH ERRORS
 3026  011520  000000                MHRCNT: .WORD   0               ;COUNT OF HARD ERRORS
 3027  011522  000000                RNODE:  .WORD   0               ;1=REMOTE NODE ITEP,0=NON ITEP
 3028
 3029
 3030                                ;       ERRTBL
```

```
                                .SBTTL  GLOBAL TEXT SECTION

                                ;++
                                ; THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
                                ; MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
                                ; MORE THAN ONE TEST.
                                ;--

                                .SBTTL          DEVICE SUPPORTED
                                ;
                                ; NAMES OF DEVICES SUPPORTED BY PROGRAM
                                ;

011524                                  DEVTYP  <DUP-11>
011524                                                                  L$DVTYP::
011524  052504  026520  030461                                                   .ASCIZ  /DUP-11/
011532     000
        011534                                                                  .EVEN

                                .SBTTL          PROGRAM IDENTIFICATION
                                ; TEST DESCRIPTION
                                ;
011534                                  DESCRIPT        <DUP-11 DATA COMM LINK TEST >
011534                                                                  L$DESC::
011534  052504  026520  030461                                                   .ASCIZ  /DUP-11 DATA COM
011542  042040  052101  020101
011550  047503  046515  046040
011556  047111  020113  042524
011564  052123  000040
                                                                                .EVEN
                                .EVEN
```

```
                                        .SBTTL          GLOBAL FORMAT STATEMENTS, MESSAGES, AND ASCII INFO
                                
011570  041504  052114  000076  CLI$PM: .ASCIZ  /DCLT>/
011576  050122  037124     000  CLI$RP: .ASCIZ  /RPT>/
011603     045  022516  037501  CLIERM: .ASCIZ  /%N%A?ILL CMD-BAD SYNTX?/
011633     045  022516  037501  CLINUF: .ASCIZ  /%N%A?INCMPLTE CMD?/
011656  047045  040445  047077  CLINBG: .ASCIZ  /%N%A?NUM TOO BIG?/
011700  047045  040445  041077  CLIBRX: .ASCIZ  /%N%A?BAD RADIX?/
011720  047045  040445  021077  CLIBDL: .ASCIZ  /%N%A?"LOOP" VALID ONLY IN ACTIVE?/
011762  047045  040445  021077  CLINPS: .ASCIZ  /%N%A?"ECHO" VALID ONLY IN PASSIVE?/
012025     045  022516  037501  CLIBCR: .ASCIZ  /%N%A?ILL CHR- "A-Z,0-9,SP,TAB" ONLY?/
012072  047045  040445  021077  CLISE0: .ASCIZ  /%N%A?"SIZE=0" NOT VALID?/
012123     045  022516  037501  CLIPW:  .ASCIZ  /%N%A?TRANSMIT & EXPECT LIST MUST BE IDENTICAL FOR LOOP?/
012213     045  022516  052101  HLP0:   .ASCIZ  /%N%ATHIS IS DCLT. TYPE "H" OR "?" FOR DETAILS/
012271     045  022516  000124  HLPF:   .ASCIZ  /%N%T/
012276  041504  052114  041440  HLP1:   .ASCIZ  /DCLT CMDS:/
012311     040  046103  040505  HLP2:   .ASCII  / CLEAR OR SHOW  EXPECTLIST OR TRANSMITLIST/<15><12>
012365     040  051120  047111          .ASCII  / PRINT/<15><12>
012375     040  054105  052111          .ASCII  / EXIT/<15><12>
012404  042040  046525  020120          .ASCIZ  ? DUMP START-END/B?
012426  051440  052105  042440  HLP3:   .ASCIZ  ? SET EXPECTMSG OR TRANSMITMSG=TYPE/SIZE=N OR /COPY=N?
012513     040  042523  020124  HLP3A:  .ASCIZ  / SET EXPECT=TRANSMIT/
012540  020040  052040  050131  HLP4:   .ASCIZ  ?   TYPE=ONES,ZEROES,1ALT,0ALT,ITEP,CCITT,ALPHA?
012617     040  020040  020040  HLP4A:  .ASCIZ  /       OR "OPR SPCD=A-Z,SP,TAB,0-9 IN QUOTES"/
012675     040  052522  020116  HLP5:   .ASCIZ  ? RUN MODE=MTYP/LOOP=LTYP/CHECK,PROTOCOL,STATUS,ECHO,MODEM,PASS=N?
012776  020040  046440  054524  HLP6:   .ASCII  /   MTYP=TRAN,REC,ACT,PAS,TAL,LIS,DOWN/<15><12>
013045     040  020040  052114          .ASCIZ  /   LTYP=INT,CAB,LOC,REM/

013075     045  022516  052101  RHLP0:  .ASCIZ  /%N%ATYPE "H" OR "?" FOR HELP!/
013133     104  046103  020124  RHLP1:  .ASCIZ  /DCLT REPORT CMDS:/
013155     114  043517  026440  RHLP2:  .ASCIZ  /LOG - PRINT DCLT EVENT LOG/
013210  054105  052111  026440  RHLP3:  .ASCIZ  /EXIT - EXIT REPORT LEVEL/
013241     110  046105  020120  RHLP4:  .ASCIZ  /HELP - PRINT THIS MESSAGE/
013273     103  052517  052116  RHLP5:  .ASCIZ  ?COUNTERS/SW - PRINT DDCMP COUNTERS?
013336  044127  051105  020105  RHLP6:  .ASCIZ  ?WHERE /SW=FULL, /ERRORS, /OFFSET=NN(O)?
013405     045  022516  047501  RPTIV:  .ASCIZ  /%N%AOFFSET INVALID/
013430  047045  040445  042104  RPTNV:  .ASCIZ  /%N%ADDCMP COUNTERS VALID ONLY WITH PROTOCOL SELECTED./
013516  047045  040445  051515  SHMSG:  .ASCIZ  ?%N%AMSG: TYPE=%T%A/SIZE=%D3?
013552  042532  047522  051505  SHTYP0: .ASCIZ  /ZEROES/
013561     117  042516  000123  SHTYP1: .ASCIZ  /ONES/
013566  040461  052114     000  SHTYP2: .ASCIZ  /1ALT/
013573     060  046101  000124  SHTYP3: .ASCIZ  /0ALT/
013600  041503  052111  000124  SHTYP4: .ASCIZ  /CCITT/
013606  052111  050105     000  SHTYP5: .ASCIZ  /ITEP/
013613     101  050114  040510  SHTYP6: .ASCIZ  /ALPHA/
013621     117  051120  051440  SHTYP7: .ASCIZ  /OPR SPEC/
013632  042522  042503  053111  MO0:    .ASCIZ  /RECEIVE/
013642  051124  047101  046523  MO1:    .ASCIZ  /TRANSMIT/
013653     120  051501  044523  MO2:    .ASCIZ  /PASSIVE/
013663     101  052103  053111  MO3:    .ASCIZ  /ACTIVE/
013672  047504  047127  044514  MO4:    .ASCIZ  /DOWNLINELOAD/
013707     124  046101  000113  MO5:    .ASCIZ  /TALK/
013714  044514  052123  047105  MO6:    .ASCIZ  /LISTEN/
013723     000          LP0:    .ASCIZ  //
013724  046057  047517  036520  LP00:   .ASCIZ  ?/LOOP=?
013733     111  052116  051105  LP1:    .ASCIZ  ?INTERNAL?
```

```
013744  040503  046102  000105  LP2:    .ASCIZ  ?CABLE?
013752  047514  040503  046514  LP3:    .ASCIZ  ?LOCALMODEM?
013765     122  046505  052117  LP4:    .ASCIZ  ?REMOTEMODEM?
014001     116     117          PNST:   .ASCII  /NO/
014003     123  040524  052524  PST:    .ASCIZ  /STATUS/
014012  047516                   PNCK:   .ASCII  /NO/
014014  044103  041505  000113  PCK:    .ASCIZ  /CHECK/
014022  047516                   PNEC:   .ASCII  /NO/
014024  041505  047510     000  PEC:    .ASCIZ  /ECHO/
014031     116     117          PNMS:   .ASCII  /NO/
014033     115  042117  046505  PMS:    .ASCIZ  /MODEM/
014041     116     117          PNPR:   .ASCII  /NO/
014043     120  047522  047524  PPR:    .ASCIZ  /PROTOCOL/
014054  047045  040445  044514  LISP:   .ASCIZ  /%N%ALIS>/
014065     124  045514  000076  OPRMM:  .ASCIZ  /TLK>/
014072  044124  051511  040440  L5060:  .ASCIZ  /THIS A 50. OR 60. HZ. LSI-11:/
                                        .EVEN



                                ;
                                ; FORMAT STATEMENTS USED IN PRINT CALLS
                                ;

014130  047045  040445  047504  DLLCM:  .ASCIZ  /%N%ADOWN LINE LOAD NOT SUPPORTED BY THIS DEVICE/

014210  047045  040445  046103  BDCLK:  .ASCIZ  /%N%ACLOCK NOT FOUND/
014234  047045  040445  040502  NOCLK:  .ASCIZ  /%N%ABAD CLOCK - PROGRAM WILL HANG ON ''TIMEOUT''!!/
014315     115  054101  020056  TABEX:  .ASCIZ  /MAX. CHAR. MSG COUNT EXCEEDED -/
014355     102  043125  042506  BUFEX:  .ASCIZ  /BUFFER FULL -/
014373     045  022516  022524  MSGTRN: .ASCIZ  /%N%T%A MSG. NOT BUILT !!/
014424  047045  040445  044103  MSGTRU: .ASCIZ  /%N%ACHAR. COUNT EXCEEDS BUFF LIMIT - MSG TRUNCATED/
014507     045  022516  032523  SHF0:   .ASCIZ  ?%N%S5%AMODE=%T%T%T%A/PASS=%Z5?
014545     045  022516  032523  SHF1:   .ASCIZ  ?%N%S5%S5%S5%A/%T%A/%T%A/%T%A/%T%A/%T?
014612  051445  022465  052101  EFM2:   .ASCIZ  /%S5%ATOTAL MISMATCHES IN MSG = %D5/
014655     045  022516  031523  PCPM:   .ASCIZ  /%N%S3%ACALLED FROM PC=%O6/
014707     045  032523  040445  EFM11:  .ASCIZ  /%S5%ACOMPARE COUNT=%D5%S3%ARECEIVE COUNT=%D5/
014764  047515  042504  020115  MSCMS:  .ASCIZ  /MODEM STATUS CHANGES FOR THIS PASS WERE../
015036  051445  022465  044101  EFM13:  .ASCIZ  /%S5%AHARD CHANGES=%D5%A%S3%AGLITCHES=%D5/

                                ;EVENT DESCRIPTION MESSAGES

015107     124  040522  051516  EDTXQ:  .ASCIZ  /TRANSMIT MSG QUEUED/
015133     124  040522  051516  EDTXC:  .ASCIZ  /TRANSMIT MSG COMPLETED/
015162  042522  042503  053111  EDRXQ:  .ASCIZ  /RECEIVE SPACE QUEUED/
015207     122  041505  044505  EDRXC:  .ASCIZ  /RECEIVE MSG COMPLETED/
015235     104  053105  041511  EDDER:  .ASCIZ  /DEVICE ERROR/
015252  040504  040524  041440  EDDCK:  .ASCIZ  /DATA COMPARISON STARTED/
015302  042504  044526  042503  EDDVI:  .ASCIZ  /DEVICE INIT AND SETUP/
015330  040504  040524  041440  EDDLE:  .ASCIZ  /DATA COMPARISON LENGTH ERROR/
015365     104  052101  020101  EDDDE:  .ASCIZ  /DATA COMPARISON DATA ERROR/
015420  047105  020104  043117  EDEOP:  .ASCIZ  /END OF PASS/
015434  047515  042504  020115  EDMOS:  .ASCIZ  /MODEM STATUS CHANGE/
```

```
        015460  041536  040440  047502  EDABO:  .ASCIZ  /^C ABORT/

                                        ;EVENT REPORTING MESSAGES
        015471     045  031523  047445  BASM3:  .ASCIZ  /%S3%03/
        015500  051445  022463  033117  BASM2:  .ASCIZ  /%S3%06/
        015507     045  022516  033117  BASM1:  .ASCIZ  /%N%06/
```

```
015515     045  022516  052101  NULEVT: .ASCIZ  /%N%ATHE DCLT EVENT LOG IS EMPTY/
015555     045  022516  037101  EVTF0:  .ASCIZ  /%N%A>>> DCLT EVENT LOG ENTRY <<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<</
015651     045  022516  032504  EVTF1:  .ASCIZ  /%N%D5%A:%Z2%A:%Z2%S3%T/
015700  047045  051445  022463  EVTF2:  .ASCIZ  /%N%S3%AADDR OF MSG=%O6%S3%ABYTE COUNT=%D5/
015752  047045  051445  022463  EVTF3:  .ASCIZ  /%N%S3%T%N/
015764  051445  022463  033117  EVTF3C: .ASCIZ  /%S3%O6%S3%O6/
016001     045  031523  047445  EVTF3D: .ASCIZ  /%S3%O6%S3%O6%S3%T/
016023     045  022516  031523  EVTF4:  .ASCIZ  /%N%S3%AADDR OF MSG=%O6%S3%ABYTE COUNT=%D5%S3%ANO. OF CMP ERRS=%D5/
016125     045  022516  031523  EVTF4A: .ASCIZ  /%N%S3%AADDR OF MSG=%O6%S3%ARX BYTES=%D5%S3%ACOMPARE BYTES=%D5/

016223     045  022516  031523  EVTF4B: .ASCIZ  /%N%S3%APASS=%D5%S3%AERRORS=%D5%S3%ASTRT-TO=%D5/

016302  051445  022465  041101  EVTF5A: .ASCIZ  /%S5%ABYTE# IN MSG.=%D5%S3%AEXPTD=%O3%S3%ARECVD=%O3/

016365     045  022516  034523  EVMOCG: .ASCIZ  /%N%S9%ACHANGED TO:/
```

```
                                 ; *****************************************************************
                                 ;DO NOT SEPERATE THE NEXT LIST OF MESSAGES - MODEM SIGNAL HEADER AND REPORT

016410 047045    051445    022470 EVMOHD: .ASCIZ   /%N%S8%AMODEM STATUS: CTS DSR DCD RTS RI  SRD/
016465    045    022516    034523 EVMOST: .ASCII   /%N%S9%S9%S5%A/
016502    130       040       040 EVMCTS: .BYTE    'X,40,40,40
016506    130       040       040 EVMDSR: .BYTE    'X,40,40,40
016512    130       040       040 EVMDCD: .BYTE    'X,40,40,40
016516    130       040       040 EVMRTS: .BYTE    'X,40,40,40
016522    130       040       040 EVMRI:  .BYTE    'X,40,40,40
016526    130       040       040 EVMSRD: .BYTE    'X,40,40,40
016532    000                             .BYTE    0
       016534                             .EVEN

                                 ;EXECUTION STATUS MESSAGES TO BE PRINTED TO KEEP OPERATOR AWAKE
```

```
016534  047045     000            CR:       .ASCIZ  /%N/             ;CR FOR LINES IN A ROW
016537     045  031523  040445    STXQ:     .ASCIZ  /%S3%ATXQ/       ;ABOUT TO TRANSMIT
016550  051445  022463  052101    STXC:     .ASCIZ  /%S3%ATXC/       ;TX COMPLETED
016561     045  031523  040445    SRXQ:     .ASCIZ  /%S3%ARXQ/       ;ABOUT TO RECEIVE
016572  051445  022463  042501    SDVE:     .ASCIZ  /%S3%AERR/       ;DEVICE ERROR
016603     045  031523  040445    SCM:      .ASCIZ  /%S3%ACMP/       ;ABOUT TO DO DATA CHECKING OF RECVD VS. EXPTD
016614  051445  022463  044501    SDVI:     .ASCIZ  /%S3%AINI/       ;DEVICE ABOUT TO BE INITIALIZED
016625     045  031523  040445    SCML:     .ASCIZ  /%S3%ACML/       ;COMPARE LENGTH ERROR
016636  051445  022463  041501    SCMD:     .ASCIZ  /%S3%ACMD/       ;COMPARE DATA ERROR
016647     045  031523  040445    SEOP:     .ASCIZ  /%S3%AEOP/       ;END  OF PASS
                                            .EVEN

016660  051445  022463  046501    SMSC:     .ASCIZ  /%S3%AMSC/       ;MODEM STATUS CHANGE.

016671     115  042117  046505    GLMSG:   .ASCIZ  /MODEM STATUS GLITCHED/
016717     115  042117  046505    HRDMSG:  .ASCIZ  /MODEM STATUS HARD ERROR/
```

```
016747    115  051501  042524  DVEM0:  .ASCII  /MASTER RESET DID NOT WORK/
017000 005015  020040  051040          .ASCIZ  <15><12>/   RXCSR    TXCSR  /
017026 047516  041440  042514  DVEM1:  .ASCII  /NO CLEAR TO SEND FROM MODEM /
017062 005015  020040  051040          .ASCIZ  <15><12>/   RXCSR    TXCSR  /
017110 044524  042515  047440  DVEM2:  .ASCII  /TIME OUT WAITING FOR RX OR TX TO COMPLETE/
017161    015  020012  020040          .ASCIZ  <15><12>/   RXCSR    TXCSR/
017205    103  041522  044440  DVEM3:  .ASCII  /CRC IN ERROR/
017221    015  020012  051040          .ASCIZ  <15><12>/  RXDBUF     RXCSR/
017246 042522  042503  053111  DVEM4:  .ASCII  /RECEIVER OVERRUN/
017266 005015  020040  054122          .ASCIZ  <15><12>/  RXDBUF     RXCSR/
017313    124  046511  042105  DVEM5:  .ASCII  /TIMED OUT IN START,STACK,ACK SEQ/
017353    015  020012  020040          .ASCIZ  <15><12>/   RDATA    SDATA/
017377    115  042117  046505  DVEM6:  .ASCII  /MODEM DID NOT RETURN MODEM READY/
017437    015  020012  020040          .ASCIZ  <15><12>/   RXCSR     TXCSR/


                                      .EVEN
```

```
                                .SBTTL  GLOBAL ERROR REPORT SECTION

                                ;++
                                ; THE GLOBAL ERROR REPORT SECTION CONTAINS MESSAGE PRINTING AREAS
                                ; USED BY MORE THAN TEST TO OUTPUT ADDITIONAL ERROR INFORMATION.  PRINTB
                                ; (BASIC) AND PRINTX (EXTENDED) CALLS ARE USED TO CALL PRINT SERVICES.
                                ;--

017464                                  BGNMSG  ERR1
017464                                                                  ERR1::
017464                                  PRINTB  #EVTF5A,OFSET,<B,GOOD>,<B,BAD>  ;INDIVIDUAL DATA COMPARE ERROR
017464  005046                                                                  CLR     -(SP)
017466  153716  006555                                                          BISB    BAD,(SP)
017472  005046                                                                  CLR     -(SP)
017474  153716  006554                                                          BISB    GOOD,(SP)
017500  013746  006532                                                          MOV     OFSET,-(SP)
017504  012746  016302                                                          MOV     #EVTF5A,-(SP)
017510  012746  000004                                                          MOV     #4,-(SP)
017514  010600                                                                  MOV     SP,R0
017516  104414                                                                  TRAP    C$PNTB
017520  062706  000012                                                          ADD     #12,SP
017524                                  ENDMSG
017524                                                                  L10001:
017524  104423                                                                  TRAP    C$MSG

017526                                  BGNMSG  ERR2
017526                                                                  ERR2::
017526                                  PRINTB  #EFM2,TEMP4                     ;TOTAL DATA COMPARE FAILS ERROR
017526  013746  006544                                                          MOV     TEMP4,-(SP)
017532  012746  014612                                                          MOV     #EFM2,-(SP)
017536  012746  000002                                                          MOV     #2,-(SP)
017542  010600                                                                  MOV     SP,R0
017544  104414                                                                  TRAP    C$PNTB
017546  062706  000006                                                          ADD     #6,SP
017552                                  ENDMSG
017552                                                                  L10002:
017552  104423                                                                  TRAP    C$MSG

017554                                  BGNMSG  ERR10
017554                                                                  ERR10::
017554                                  PRINTB  #EFM11,R4,TEMP3                 ;LENGH COMPARISON ERROR
017554  013746  006542                                                          MOV     TEMP3,-(SP)
017560  010446                                                                  MOV     R4,-(SP)
017562  012746  014707                                                          MOV     #EFM11,-(SP)
017566  012746  000003                                                          MOV     #3,-(SP)
017572  010600                                                                  MOV     SP,R0
017574  104414                                                                  TRAP    C$PNTB
017576  062706  000010                                                          ADD     #10,SP
017602                                  ENDMSG
017602                                                                  L10003:
017602  104423                                                                  TRAP    C$MSG
```

```
3115  017604                          BGNMSG  ERR4
3116  017604                                                          ERR4::
3117  017604                          PRINTB  #EFM13,MHRCNT,MGLCNT    ;MODEM STATUS CHANGE
3118  017604  013746  011516                                                  MOV     MGLCNT,-(SP)
3119  017610  013746  011520                                                  MOV     MHRCNT,-(SP)
3120  017614  012746  015036                                                  MOV     #EFM13,-(SP)
3121  017620  012746  000003                                                  MOV     #3,-(SP)
3122  017624  010600                                                          MOV     SP,R0
3123  017626  104414                                                          TRAP    C$PNTB
3124  017630  062706  000010                                                  ADD     #10,SP
3125  017634                          ENDMSG
3126  017634                                                          L10004:
3127  017634  104423                                                          TRAP    C$MSG
3128
3129
3130
3131                                  ;
3132                                  ;PRINT THE 2 OCTAL #'S IN TEMP3/4
3133                                  ;
3134
3135  017636                          BGNMSG  ERR13
3136  017636                                                          ERR13::
3137  017636                          PRINTB  #EVTF3C,TEMP3,TEMP4
3138  017636  013746  006544                                                  MOV     TEMP4,-(SP)
3139  017642  013746  006542                                                  MOV     TEMP3,-(SP)
3140  017646  012746  015764                                                  MOV     #EVTF3C,-(SP)
3141  017652  012746  000003                                                  MOV     #3,-(SP)
3142  017656  010600                                                          MOV     SP,R0
3143  017660  104414                                                          TRAP    C$PNTB
3144  017662  062706  000010                                                  ADD     #10,SP
3145  017666                          ENDMSG
3146  017666                                                          L10005:
3147  017666  104423                                                          TRAP    C$MSG
3148
3149                                  ;
3150                                  ;PRINT THE 2 OCTAL #'S IN TEMP3/4
3151                                  ; AND THE MESG. WHOSE ADDR. IS IN CONOTM
3152                                  ;
3153
3154  017670                          BGNMSG  ERR14
3155  017670                                                          ERR14::
3156  017670                          PRINTB  #EVTF3D,TEMP3,TEMP4,CONOTM
3157  017670  013746  006550                                                  MOV     CONOTM,-(SP)
3158  017674  013746  006544                                                  MOV     TEMP4,-(SP)
3159  017700  013746  006542                                                  MOV     TEMP3,-(SP)
3160  017704  012746  016001                                                  MOV     #EVTF3D,-(SP)
3161  017710  012746  000004                                                  MOV     #4,-(SP)
3162  017714  010600                                                          MOV     SP,R0
3163  017716  104414                                                          TRAP    C$PNTB
3164  017720  062706  000012                                                  ADD     #12,SP
3165  017724                          ENDMSG
3166  017724                                                          L10006:
3167  017724  104423                                                          TRAP    C$MSG
3168
3169  017726                          EXIT    MSG
3170  017726  000167                                                          .WORD   J$JMP
```

```
 3171  017730  177772                                                .WORD   L10006-2-.
 3172
 3173
```

```
                                .SBTTL  GLOBAL SUBROUTINES SECTION

                                ;++
                                ; THE GLOBAL SUBROUTINES SECTION CONTAINS THE SUBROUTINES
                                ; THAT ARE USED IN MORE THAN ONE TEST.
                                ;--


                                .SBTTL          CLOCK SETUP SUBROUTINE

                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       THIS SUBROUTINE SETS UP THE CLOCK INFORMATION TABLE FOLLOWING A "CLOCK"
                                ;       CALL EXECUTED IN THE INITIALIZATION CODE. BUT SINCE THE "CLOCK" CALL
                                ;       SAYS NOTHING ABOUT AN LSI-11'S CLOCK, THIS ROUTINE IS ONLY USED IF A
                                ;       LINE OR P-CLOCK IS FOUND.
                                ;
                                ; INPUTS:
                                ;       R1= POINTS TO SUPERVISOR SPACE WHERE CLOCK INFO WAS RETURNED
                                ;       R2= POINTS TO "CLK" TABLE WHERE CLOCK INFO WILL BE KEPT
                                ;
                                ; IMPLICIT INPUTS:
                                ;       THE SUPERVISOR  SPACE WHERE CLOCK INFO WAS RETURNED BY THE "CLOCK" CALL
                                ;
                                ; OUTPUTS:
                                ;       "CLKCSR" GETS LOADED WITH THE CLOCK'S CSR ADDRESS
                                ;       "CLKBR" GETS LOADED WITH THE CLOCK'S INTERRUPT LEVEL
                                ;       "CLKVEC" GETS LOADED WITH THE CLOCK'S INTERRUPT VECTOR
                                ;       "CLKHZ" GETS LOADED WITH THE LINE FREQ. (HERTZ RATE) WHICH DETERMINES
                                ;               THE NUMBER OF TICKS IN A SECOND
                                ;
                                ; CALLING SEQUENCE:
                                ;       JSR     PC,CLKSET               ;CALL CLOCK SETUP WITH R1 & R2 SETUP
                                ;--

017732                          CLKSET:
017732  012122                         MOV     (R1)+,(R2)+             ;LOAD CLOCK'S CSR ADDR. INTO "CLKCSR"
017734  012112                         MOV     (R1)+,(R2)              ;LOAD CLOCK'S INT. LEVEL INTO "CLKBR"
017736  006312                         ASL     (R2)                    ;ADJUST THE INT. LEVEL FOR LOADING INTO
017740  006312                         ASL     (R2)                    ;    THE PSW WITH A "SETVEC" CALL
017742  006312                         ASL     (R2)
017744  006312                         ASL     (R2)
017746  006322                         ASL     (R2)+
017750  012122                         MOV     (R1)+,(R2)+             ;LOAD CLOCK'S INT. VECTOR INTO "CLKVEC"
017752  012122                         MOV     (R1)+,(R2)+             ;LOAD CLOCK'S HERTZ RATE INTO "CLKHZ"
017754  000207                         RTS     PC
```

```
3221
3222                                    .SBTTL          CLOCK INTERRUPT SERVICE ROUTINE
3223                                    ;++
3224                                    ; FUNCTIONAL DESCRIPTION:
3225                                    ;       THIS IS THE CLOCK INTERRUPT SERVICE ROUTINE WHICH TAKES CARE OF
3226                                    ;       KEEPING THE "TIME-SINCE-START" AND COUNTING DOWN ANY OF THE
3227                                    ;       "EVENT" TIMERS. THE TIMERS ARE USED TO TIME COMPLETION OF  DEVICE
3228                                    ;       REQUESTS. THE "TIME-SINCE-START" IS USED TO BE LOGGED WITH EACH ENTRY
3229                                    ;       INTO THE EVENT LOG.
3230                                    ;
3231                                    ; IMPLICIT INPUTS:
3232                                    ;       TIMTCK: THE CURRENT NO. OF TICKS LEFT TO BE COUNTED UNTIL A SECOND
3233                                    ;               HAS BEEN COUNTED OFF
3234                                    ;       CLKHZ:  THE NO. OF TICKS IN A SECOND, DETERMINED BY THE SYS. LINE FREQ.
3235                                    ;       TIMMIN & TIMSEC: CURRENT VALUE OF "TIME-SINCE-START"
3236                                    ;                               IN MINUTES & SECONDS
3237                                    ;       TIMER 1,2, & S: CURRENT VALUES OF THE "EVENT TIMERS"
3238                                    ;
3239                                    ; IMPLICIT OUTPUTS:
3240                                    ;       NEW VALUE OF EVENT TIMER "1" DECREMENTED BY 1 TICK IF IT WAS NON-ZERO
3241                                    ;       NEW VALUE OF EVENT TIMER "2" DECREMENTED BY 1 TICK IF IT WAS NON-ZERO
3242                                    ;       NEW VALUE OF EVENT TIMER "S" DECREMENTED BY 1 SECOND IF IT WAS NON-ZERO
3243                                    ;
3244                                    ; FUNCTIONAL SIDE EFFECTS:
3245                                    ;       THE CLOCK IS DISABLED UPON ENTRY AND REENABLED WHEN LEAVING
3246                                    ;
3247                                    ; CALLING SEQUENCE:
3248                                    ;       THIS ROUTINE IS CALLED WHEN THE CLOCK INTERRUPTS THRU "CLKVEC".
3249                                    ;       THE ADDRESS OF THIS ROUTINE WAS LOADED INTO THE CLOCK'S INTERRUPT
3250                                    ;       VECTOR WITH A SUPERVISOR "SETVEC" CALL.
3251                                    ;--
3252
3253  017756                                    BGNSRV  CLKINT
3254  017756                                                                    CLKINT::
3255
3256  017756  005077  166640                    CLR     @CLKCSR         ;DISABLE THE CLOCK FORM INTERRUPTING
3257  017762  005337  006640                    DEC     TIMTCK          ;DECREMENT THE # OF TICKS/SEC.
3258  017766  001015                            BNE     1$              ;GO CHECK TIMERS (1&2-TICKS, 3-SECONDS)
3259  017770  013737  006630  006640            MOV     CLKHZ,TIMTCK    ;RESET THE # OF TICKS/SEC.
3260  017776  005237  006636                    INC     TIMSEC          ;INC # OF SECS-SINCE-START
3261  020002  022737  000074  006636            CMP     #60.,TIMSEC     ;SEE IF WE'VE COUNTED 60 SECS. YET
3262  020010  001004                            BNE     1$              ;IF NOT, GO CHECK TIMERS
3263  020012  005237  006634                    INC     TIMMIN          ; ELSE INC MINUTES-SINCE-START
3264  020016  005037  006636                    CLR     TIMSEC          ; AND RESTART SECOND COUNTER
3265
3266  020022  005737  006642            1$:     TST     TIMER1          ;SEE IF TIMER #1, TIMING ANYTHING
3267  020026  001402                            BEQ     2$              ; IF=0, NOTHING BEING TIMED CHECK NEXT TIMER
3268  020030  005337  006642                    DEC     TIMER1          ; ELSE DECREMENT THE TIMER VALUE (BY 1 TICK)
3269  020034  005737  006644            2$:     TST     TIMER2          ;SEE IF TIMER #2, TIMING ANYTHING
3270  020040  001402                            BEQ     3$              ; IF=0, NOTHING BEING TIMED CHECK NEXT TIMER
3271  020042  005337  006644                    DEC     TIMER2          ; ELSE DECREMENT THE TIMER VALUE (BY 1 TICK)
3272  020046  005737  006646            3$:     TST     TIMERS          ;SEE IF TIMER #3, TIMING ANYTHING
3273  020052  001406                            BEQ     4$              ; IF=0, NOTHING BEING TIMED, LEAVE
3274  020054  023737  006630  006640            CMP     CLKHZ,TIMTCK    ;SEE IF A SECOND HAS BEEN COUNTED OFF
3275  020062  001002                            BNE     4$              ; BR IF NO
3276  020064  005337  006646                    DEC     TIMERS          ; ELSE DECREMENT THE TIMER VALUE (BY 1 SEC.)
```

```
 3277  020070  013777  006632  166524  4$:     MOV     CLKEN,@CLKCSR   ;REENABLE THE CLOCK TO INTERRUPT
 3278  020076                                  ENDSRV
 3279  020076                                                                  L10007:
 3280  020076  000002                                                                 RTI
```

```
3281                                    .SBTTL          EVENT LOG SUBROUTINES
3282
3283                                    ;++
3284                                    ; FUNCTIONAL DESCRIPTION:
3285                                    ;       THIS SUBROUTINE HAS A DIFFERENT ENTRY POINT
3286                                    ;       FOR EACH EVENT TO BE LOGGED AND ALWAYS PRINTS
3287                                    ;       THE SHORT "OPERATOR AWAKE" MESSAGE TO CONSOLE THEN LOGS THE
3288                                    ;       EVENT TYPE, TIME, AND THE OTHER 3 WORDS OF INFO PASSED TO THE
3289                                    ;       SUBROUTINE AT CALLING TIME
3290                                    ;
3291                                    ; INPUTS:
3292                                    ;       TIMMIN & TIMSEC:        CURRENT VALUE OF "TIME-SINCE-START"
3293                                    ;       TEMP2:  WORD #1 OF EVENT LOG INFORMATION (FOR MOST EVENT TYPES)
3294                                    ;       TEMP3:  WORD #2 OF EVENT LOG INFORMATION
3295                                    ;       TEMP4:  WORD #3 OF EVENT LOG INFORMATION
3296                                    ;       MODS:   CURRENT VALUE OF THE MODEM SIGNALS AVAILABLE FROM THE DEVICE
3297                                    ;
3298                                    ; OUTPUTS:
3299                                    ;       "OPERATOR AWAKE" MESSAGE SENT TO THE CONSOLE
3300                                    ;       NEW EVENT LOGGED IN "EVTLOG" (EVENT LOG)
3301                                    ;       UPDATED "EVTPTR" (EVENT LOG ENTRY POINTER)
3302                                    ;
3303                                    ; SUBORDINATE ROUTINES USED:
3304                                    ;       "DVMODS" THE DEVICE SUBROUTINE THAT RETURNS MODEM STATUS IN "MODS"
3305                                    ;               (FOR SOME EVENT TYPES)
3306                                    ;
3307                                    ; FUNCTIONAL SIDE EFFECTS:
3308                                    ;       TEMP:   USED TO STORE ADDRESS OF "OPERATOR AWAKE" MESSAGE
3309                                    ;       TEMP1:  USED TO SETUP THE VALUE OF THE "EVENT TYPE" BYTE FOR LOGGING
3310                                    ;
3311                                    ; CALLING SEQUENCE:
3312                                    ;       JSR     PC,LOGTXQ       ;CALL THE LOG EVENT SUBROUTINE WITH TEMP,TEMP1,
3313                                    ;        ..      ..  ..         ; TEMP2, TEMP3, AND TEMP4 SETUP
3314                                    ;        ..      ..  ..
3315                                    ;       JSR     PC,LOGCMP
3316                                    ;--
3317
3318  020100                            LOGTXQ:
3319  020100  012737  016537  006536            MOV     #STXQ,TEMP1     ;SET UP MSG. TO PRINT
3320  020106  012737  000000  006534            MOV     #TXQ,TEMP       ;SET UP EVENT TYPE
3321  020114  000517                            BR      LOGS1           ;GO LOG EVENT AND TIME
3322
3323  020116                            LOGTXC:
3324  020116  012737  016550  006536            MOV     #STXC,TEMP1     ;SET UP MSG. TO PRINT
3325  020124  012737  000002  006534            MOV     #TXC,TEMP       ;SET UP EVENT TYPE
3326  020132  000510                            BR      LOGS1           ;GO LOG EVENT AND TIME
3327
3328  020134                            LOGRXQ:
3329  020134  012737  016561  006536            MOV     #SRXQ,TEMP1     ;SET UP MSG. TO PRINT
3330  020142  012737  000004  006534            MOV     #RXQ,TEMP       ;SET UP EVENT TYPE
3331  020150  000501                            BR      LOGS1           ;GO LOG EVENT AND TIME
3332
3333  020152                            LOGRXC:
3334  020152  012737  000006  006534            MOV     #RXC,TEMP       ;SET UP EVENT TYPE
3335  020160  000475                            BR      LOGS1           ;GO LOG EVENT AND TIME
3336  020162                            LGDVE:
```

```
3337  020162  012737  016572  006536          MOV     #SDVE,TEMP1     ;SET UP MSG. TO PRINT
3338  020170  012737  000010  006534          MOV     #DER,TEMP       ;SET UP EVENT TYPE
3339  020176  000503                          BR      LOGS3           ;GO LOG EVENT AND TIME
3340
3341  020200                          LOGDVI:
3342  020200  012737  016614  006536          MOV     #SDVI,TEMP1     ;SET UP MSG. TO PRINT
3343  020206  012737  000012  006534          MOV     #DVI,TEMP       ;SET UP EVENT TYPE
3344  020214  113737  006570  006540          MOVB    MODTYP,TEMP2
3345  020222  113737  006572  006541          MOVB    MLTYP,TEMP2+1
3346  020230  013737  006600  006542          MOV     RPASS,TEMP3
3347  020236  013737  006576  006544          MOV     PARAM,TEMP4     ;SET UP EVNT ENTRIES
3348  020244  000460                          BR      LOGS3           ;GO LOG EVENT AND TIME
3349
3350  020246                          LOGCMP:
3351  020246  012737  016603  006536          MOV     #SCM,TEMP1      ;SET UP MSG. TO PRINT
3352  020254  012737  000014  006534          MOV     #DCK,TEMP       ;SET UP EVENT TYPE
3353  020262  000451                          BR      LOGS3
3354  020264                          LOGCML:
3355  020264  012737  016625  006536          MOV     #SCML,TEMP1
3356  020272  012737  000020  006534          MOV     #DLE,TEMP       ;SET UP MSG. AND TYPE
3357  020300  000442                          BR      LOGS3           ;GO LOG EVENT AND TIME
3358  020302                          LOGCMD:
3359  020302  012737  016636  006536          MOV     #SCMD,TEMP1
3360  020310  012737  000022  006534          MOV     #DDE,TEMP
3361  020316  000433                          BR      LOGS3           ;GO LOG MSG TYPE AND TIME
3362  020320                          LOGEOP:
3363  020320  012737  016647  006536          MOV     #SEOP,TEMP1
3364  020326  012737  000024  006534          MOV     #EOP,TEMP
3365  020334  000424                          BR      LOGS3           ;GO LOG MSG TYPE AND TIME
3366
3367
3368  020336                          LOGMSC:
3369  020336  012737  016660  006536          MOV     #SMSC,TEMP1
3370  020344  012737  000016  006534          MOV     #MSC,TEMP
3371  020352  000415                          BR      LOGS3
3372
3373
3374  020354  013746  006506          LOGS1:  MOV     ERRCNT,-(SP)    ;SAVE CURRENT ERROR COUNT
3375  020360  004737  035152                  JSR     PC,DVMODS       ; GO GET MODEM STATUS
3376  020364  012604                          MOV     (SP)+,R4        ;GET SAVED ERRCNT VALUE
3377  020366  020437  006506                  CMP     R4,ERRCNT       ;WHERE ANY ERRORS FOUND
3378  020372  001402                          BEQ     1$              ; BR IF NONE
3379  020374  000137  020610                  JMP     LOGEX           ; ELSE, LEAVE WITHOUT LOGGING ANYTHING
3380                                                                  ;   BUT THE DEVICE ERROR FROM 'DVMODS'
3381  020400  013737  007556  006544  1$:     MOV     MODS,TEMP4      ;AND PUT IT IN TEMP4
3382
3383  020406                          LOGS3:
3384  020406  022737  000006  006534          CMP     #RXC,TEMP
3385  020414  001434                          BEQ     LOGS5           ;IF RXC DONT PRINT
3386  020416  032737  000001  006576          BIT     #STATB,PARAM
3387  020424  001430                          BEQ     LOGS5           ;IF NO STATUS SELECTED
3388                                                                  ;GO TO 5
3389
3390  020426  022737  000010  006500          CMP     #10,LNCNT       ;HAVE WE DONE 10?
3391  020434  001012                          BNE     LOGS4           ;IF NOT GO TO 4
3392  020436  005037  006500                  CLR     LNCNT           ;ESLE CLEAR IT
```

```
3393
3394  020442                                        PRINTF  #CR             ;ELSE PRINT CR
3395  020442  012746  016534                                                        MOV     #CR,-(SP)
3396  020446  012746  000001                                                        MOV     #1,-(SP)
3397  020452  010600                                                                MOV     SP,R0
3398  020454  104417                                                                TRAP    C$PNTF
3399  020456  062706  000004                                                        ADD     #4,SP
3400  020462                                LOGS4:
3401  020462  005237  006500                       INC     LNCNT           ;INC COUNTER OF # OF AWAKE MSGS
3402  020466                                      PRINTF  TEMP1           ;PRINT OPERATOR AWAKE MSG.
3403  020466  013746  006536                                                        MOV     TEMP1,-(SP)
3404  020472  012746  000001                                                        MOV     #1,-(SP)
3405  020476  010600                                                                MOV     SP,R0
3406  020500  104417                                                                TRAP    C$PNTF
3407  020502  062706  000004                                                        ADD     #4,SP
3408  020506  010346                       LOGS5:  MOV     R3,-(SP)        ;SAVE R3 ON THE STACK
3409  020510  013703  006650                       MOV     EVTPTR,R3
3410  020514  113723  006534                       MOVB    TEMP,(R3)+      ;LOG EVENT
3411  020520  013737  006630  006534               MOV     CLKHZ,TEMP
3412  020526  163737  006640  006534               SUB     TIMTCK,TEMP
3413  020534  113723  006534                       MOVB    TEMP,(R3)+      ;LOG TIME SINCE START
3414  020540  113723  006636                       MOVB    TIMSEC,(R3)+
3415  020544  113723  006634                       MOVB    TIMMIN,(R3)+    ;TICKS,SECS AND MINS.
3416  020550  013723  006540                       MOV     TEMP2,(R3)+     ;LOG EVNT ENTRY 3
3417  020554  013723  006542                       MOV     TEMP3,(R3)+     ;LOG EVNT ENTRY 4
3418  020560  013723  006544                       MOV     TEMP4,(R3)+     ;LOG EVNT ENTRY 5
3419  020564  020327  007554                       CMP     R3,#EVTEND
3420  020570  103404                              BLO     LOGS2           ;IF EVENT LOG FULL GO
3421                                                                        ;CONTINUE;ELSE GO TO 2
3422  020572  012713  177777                       MOV     #-1,(R3)        ;LOG A TABLE END
3423  020576  012703  006652                       MOV     #EVTLOG,R3      ;PUT R3 TO START OF TABLE
3424  020602  010337  006650               LOGS2:  MOV     R3,EVTPTR       ;RESTORE POINTER
3425  020606  012603                              MOV     (SP)+,R3        ;RESTORE R3
3426  020610  000207                       LOGEX:  RTS     PC
3427
```

```
                                .SBTTL  REPORT EVENT LOG

                                        ;;RPT> LOG
                                        ;;     HELP
                                        ;;     EXIT
                                        ;;     COUNTER/FULL,ERROR,OFFSET=NN(O)

020612  010246                  REPORT: MOV     R2,-(SP)        ;SAVE R2,R3,R4 ON THE STACK
020614  010346                          MOV     R3,-(SP)
020616  010446                          MOV     R4,-(SP)

                                        ;PRINT HELP MESSAGE
020620                                  PRINTF  #RHLP0          ;BASIC HELP MESSAGE
020620  012746  013075                                                  MOV     #RHLP0,-(SP)
020624  012746  000001                                                  MOV     #1,-(SP)
020630  010600                                                          MOV     SP,R0
020632  104417                                                          TRAP    C$PNTF
020634  062706  000004                                                  ADD     #4,SP

020640  105037  003147          GETRCL: CLRB    P$GDBD          ;INIT GOOD/BAD FLAG  -1=BAD INPUT
020644  105037  003146                  CLRB    P$NNUF          ;INIT MORE COMMAND LINE INPUT NEEDED

                                        ;PRINT PROMPT 'RPT>'
020650                                  GMANID  CLI$RP,CMDBUF,A,-1,1,72.,NO
020650  104443                                                          TRAP    C$GMAN
020652  000406                                                          BR      10000$
020654  002666                                                          .WORD   CMDBUF
020656  000142                                                          .WORD   T$CODE
020660  011576                                                          .WORD   CLI$RP
020662  177777                                                          .WORD   -1
020664  000001                                                          .WORD   T$LOLIM
020666  000110                                                          .WORD   T$HILIM
020670                                                          10000$:
020670  012737  002666  003132          MOV     #CMDBUF,P$BUFA  ;INPUT BUFFER
020676  012737  021032  003134          MOV     #CLIRT,P$TREE   ;REPORT CLI TREE
020704  012737  021234  003136          MOV     #CLIRAC,P$ACT   ;ACTION ROUTINES
020712  005037  003012                  CLR     QUALFG
020716  004737  024246                  JSR     PC,P$TRV        ;GO PARSE COMMAND LINE
020722  105737  003147                  TSTB    P$GDBD          ;COMMAND OK ?
020726  001412                          BEQ     1$              ;YES,BRANCH
020730                                  PRINTF  #CLIERM         ;PRINT INVALID INPUT MESSAGE
020730  012746  011603                                                  MOV     #CLIERM,-(SP)
020734  012746  000001                                                  MOV     #1,-(SP)
020740  010600                                                          MOV     SP,R0
020742  104417                                                          TRAP    C$PNTF
020744  062706  000004                                                  ADD     #4,SP
020750  000137  020640                  JMP     GETRCL          ;TRY AGAIN

020754  105737  003146          1$:     TSTB    P$NNUF          ;MORE COMMAND NEEDED ?
020760  001412                          BEQ     10$             ;NO,BRANCH
020762                                  PRINTF  #CLINUF         ;INCOMPLETE MESSAGE
020762  012746  011633                                                  MOV     #CLINUF,-(SP)
020766  012746  000001                                                  MOV     #1,-(SP)
020772  010600                                                          MOV     SP,R0
020774  104417                                                          TRAP    C$PNTF
020776  062706  000004                                                  ADD     #4,SP
```

```
 3484  021002  000137  020640                    JMP     GETRCL                  ;TRY AGAIN
 3485
 3486  021006  023727  003010  000002  10$:      CMP     KEYWD1,#RPEXT           ;EXIT COMMAND ?
 3487  021014  001402                            BEQ     20$                     ;YES,BRANCH
 3488  021016  000137  020640                    JMP     GETRCL                  ;GET ANOTHER COMMAND
 3489  021022  012604                  20$:      MOV     (SP)+,R4                ;RESTORE R4
 3490  021024  012603                            MOV     (SP)+,R3                ;RESTORE R3
 3491  021026  012602                            MOV     (SP)+,R2                ;RESTORE R2
 3492  021030  000207                            RTS     PC                      ;RETURN
```

```
 CZDCLB DUP-11 DATA COMM. LINK TEST     MACY11 30A(1052)  20-JUL-83  13:19  PAGE 88
CZDCLB.P11    19-JUL-83 17:12           COMMAND LINE PARSING TREE FOR REPORT

  3493
  3494  021032                         .SBTTL  COMMAND LINE PARSING TREE FOR REPORT
  3495  021036                         CLIRT:  CLI CLISPA,0,R10$                ;SKIP SPACES IN COMMAND LINE
  3496  021042                         R10$:   CLI <'?>,RPHLP,R11$              ;IF INPUT = ? THEN PRINT HELP MESSAGE
  3497  021044                                 CLI CLIEXI,0                     ;;AND EXIT PARSER
  3498  021060                         R11$:   CLI CLISTR,RPHLP,R12$,<'HELP'>   ;IF INPUT = 'HELP' THEN PRINT HELP
  3499  021062                                 CLI CLIEXI,0                     ;;MESSAGE AND EXIT PARSER
  3500  021076                         R12$:   CLI CLISTR,RPEXT,R13$,<'EXIT'>   ;IF INPUT = 'EXIT' THEN SET KEYWORD =
  3501  021100                                 CLI CLIEXI,0                     ;;RPEXT AND EXIT PARSER
  3502  021112                         R13$:   CLI CLISTR,RPLOG,R14$,<'LOG'>    ;IF INPUT = 'LOG' THEN GO PRINT EVENT
  3503  021114                                 CLI CLIEXI,0                     ;;LOG AND EXIT PARSER
  3504  021134                         R14$:   CLI CLISTR,RNOTNF,R30$,<'COUNTERS'>;IF INPUT = 'COUNTERS'
  3505  021140                                 CLI CLIBR,0,R20$                 ;;THEN GET SWITCH
  3506  021144                         R20$:   CLI <'/>,RNOTNF,R30$
  3507  021160                                 CLI CLISTR,RPERR,R21$,<'ERROR'> ; REPORT ERROR COUNTERS
  3508  021162                                 CLI CLIEXI,0
  3509  021176                         R21$:   CLI CLISTR,RPFUL,R22$,<'FULL'>  ; REPORT ALL STATUS
  3510  021200                                 CLI CLIEXI,0
  3511  021216                         R22$:   CLI CLISTR,RNOTNF,R30$,<'OFFSET'> ; REPORT ONE LOCATION
  3512  021222                                 CLI <'=>,0,R30$
  3513  021226                                 CLI CLIOCT,RPSWO,R30$
  3514  021230                                 CLI CLIEXI,0
  3515  021232                         R30$:   CLI CLIERR,0
                                        R125$:  CLI CLIEXI,0
```

```
                                .SBTTL  CLI ACTION DISPATCHER AND ROUTINES
021234  006302          CLIRAC: ASL     R2              ;SET UP INDEX
021236  016202  021252          MOV     10$(R2),R2      ;
021242  062702  021252          ADD     #10$,R2         ;
021246  004712                  JSR     PC,(R2)         ;GO DO ACTION
021250  000207                  RTS     PC              ;RETURN
021252  000026          10$:    .WORD   ACTRNL-10$      ;NULL
021254  000030                  .WORD   ACTRHL-10$      ;HELP ROUTINE
021256  000074                  .WORD   ACTREX-10$      ;EXIT ROUTINE
021260  000104                  .WORD   ACTRLG-10$      ;REPORT EVENT LOG ROUTINE
021262  000142                  .WORD   ACTERR-10$      ;REPORT ONLY ERROR COUNTERS
021264  000120                  .WORD   ACTFUL-10$      ;REPORT ALL COUNTERS
021266  000020                  .WORD   ACTRNF-10$      ;MORE COMMAND NEEDED
021270  000164                  .WORD   ACTRSO-10$      ;VALIDATE OFFSET

                                ;;;;;ACTION ROUTINES FOR REPORT;;;;;
021272  113737  177777  003146 ACTRNF: MOVB    -1,P$NNUF       ;SET'MORE COMMAND NEEDED' FLAG
021300  000207         ACTRNL: RTS     PC              ;NULL

                                ;PRINT HELP MESSAGE
021302  012702  003036 ACTRHL: MOV     #RHLPTB,R2      ;INDEX FOR HELP MESSAGES
021306         1$:     PRINTF  #HLPF,(R2)+     ;PRINT IT
021306  012246                                                  MOV     (R2)+,-(SP)
021310  012746  012271                                          MOV     #HLPF,-(SP)
021314  012746  000002                                          MOV     #2,-(SP)
021320  010600                                                  MOV     SP,R0
021322  104417                                                  TRAP    C$PNTF
021324  062706  000006                                          ADD     #6,SP
021330  020227  003052          CMP     R2,#RHLPEN      ;LAST MESSAGE ?
021334  001364          BNE     1$              ;NO,BRANCH
021336  012737  000001  003010 MOV     #RPHLP,KEYWD1   ;SET KEYWORD
021344  000207          RTS     PC              ;RETURN


                                ;EXIT REPORT LEVEL
021346  012737  000002  003010 ACTREX: MOV     #RPEXT,KEYWD1   ;SET KEYWORD AND RETURN
021354  000207          RTS     PC

                                ;PRINT EVENT LOG
021356  004737  022060 ACTRLG: JSR     PC,REPLOG       ;GO PRINT EVENT LOG
021362  012737  000003  003010 MOV     #RPLOG,KEYWD1   ;SET KEYWORD
021370  000207          RTS     PC              ;RETURN

                                ;;REPORT ALL MESSAGE AND ERROR COUNTERS
021372  012737  000000  037254 ACTFUL: MOV     #0,FIR          ;STARTING INDEX
021400  012737  000036  037252 MOV     #36,LAST        ;LAST INDEX
021406  004737  021542          JSR     PC,STAPRI       ;GO PRINT IT
021412  000207          RETURN

                                ;;PRINT ONLY DDCMP ERROR COUNTERS
021414  012737  000014  037254 ACTERR: MOV     #14,FIR         ;FIRST ERROR
021422  012737  000036  037252 MOV     #36,LAST        ;LAST ERROR
021430  004737  021542          JSR     PC,STAPRI       ;GO PRINT IT
021434  000207          RETURN
```

```
3572                                        ;;VERIFY OFFSET VALUE
3573  021436  105037  003146          ACTRSO: CLRB    P$NNUF          ;CLEAR 'NOT ENOUGH FLAG'
3574  021442  032737  000001  003142          BIT     #BIT0,P$NUM     ;IS IT ODD ?
3575  021450  001020                          BNE     20$             ;YES,BRANCH
3576  021452  005737  003142                  TST     P$NUM           ;NEGATIVE # ?
3577  021456  100415                          BMI     20$             ;YES,BRANCH
3578  021460  023727  003142  000036          CMP     P$NUM,#36       ;INDEX LARGER THEN 36 ?
3579  021466  003011                          BGT     20$             ;YES,BRANCH
3580  021470  013737  003142  037254          MOV     P$NUM,FIR       ;STARTING INDEX
3581  021476  013737  003142  037252          MOV     P$NUM,LAST      ;LAST LOCATION
3582  021504  004737  021542                  JSR     PC,STAPRI       ;PRINT SINGLE LOCATION
3583  021510  000413                          BR      30$             ;EXIT
3584  021512                          20$:    PRINTS  #RPTIV          ;INVALID
3585  021512  012746  013405                                                  MOV     #RPTIV,-(SP)
3586  021516  012746  000001                                                  MOV     #1,-(SP)
3587  021522  010600                                                          MOV     SP,R0
3588  021524  104416                                                          TRAP    C$PNTS
3589  021526  062706  000004                                                  ADD     #4,SP
3590  021532  112737  177777  003147          MOVB    #-1,P$GDBD      ;SET BAD DATA FLAG
3591  021540  000207                  30$:    RETURN                  ;OFFSET OK - EXIT
3592
3593
3594                                        ;; PRINT ROUTINES
3595  021542  010146                  STAPRI: MOV     R1,-(SP)        ;SAVE R1
3596  021544  032737  000040  006576          BIT     #PROTOB,PARAM   ;"/PROTOCOL"?
3597  021552  001011                          BNE     5$              ;YES,BRANCH
3598  021554                                  PRINTF  #RPTNV          ;"COUNTERS VALID ONLY WITH PROTOCOL SELECTED"
3599  021554  012746  013430                                                  MOV     #RPTNV,-(SP)
3600  021560  012746  000001                                                  MOV     #1,-(SP)
3601  021564  010600                                                          MOV     SP,R0
3602  021566  104417                                                          TRAP    C$PNTF
3603  021570  062706  000004                                                  ADD     #4,SP
3604  021574  000420                          BR      20$             ;EXIT
3605  021576  013701  037254          5$:     MOV     FIR,R1  ;FIRST INDEX
3606  021602  016137  037152  037256  10$:    MOV     STALST(R1),MES  ;MESSAGE ADDRESS
3607  021610  016137  037052  037260          MOV     PRSTAT(R1),MESDATA ;MESSAGE DATA
3608  021616  004771  037212                  JSR     PC,@STAIND(R1)  ;JUMP TO PROPER PRINT ROUTINE
3609  021622  062701  000002                  ADD     #2,R1           ;BUMP INDEX
3610  021626  020137  037252                  CMP     R1,LAST         ;ALL MESSAGES PRINTED
3611  021632  003001                          BGT     20$             ;YES,BRANCH
3612  021634  000762                          BR      10$             ;PRINT NEXT MESSAGE
3613  021636  012601                  20$:    MOV     (SP)+,R1        ;RESTORE R1
3614  021640  000207                          RETURN                  ;EXIT
3615
3616
3617                                        ;; PRINT WORD LOCATION
3618  021642                          PRIW:   PRINTS  MES,MESDATA     ;PRINT WORD LOCATION
3619  021642  013746  037260                                                  MOV     MESDATA,-(SP)
3620  021646  013746  037256                                                  MOV     MES,-(SP)
3621  021652  012746  000002                                                  MOV     #2,-(SP)
3622  021656  010600                                                          MOV     SP,R0
3623  021660  104416                                                          TRAP    C$PNTS
3624  021662  062706  000006                                                  ADD     #6,SP
3625  021666  000207                          RETURN
3626
3627
```

```
                        ;; PRINT TWO BYTES OF DATA
                        PRIBB:  PRINTS  MES,<B,MESDATA>,<B,MESDATA+1>
                                                                        CLR     -(SP)
                                                                        BISB    MESDATA+1,(SP)
                                                                        CLR     -(SP)
                                                                        BISB    MESDATA,(SP)
                                                                        MOV     MES,-(SP)
                                                                        MOV     #3,-(SP)
                                                                        MOV     SP,R0
                                                                        TRAP    C$PNTS
                                                                        ADD     #10,SP
                                RETURN

                        ;; PRINT SPECIAL BYTE MASK
                        PRIBS:  CLR     TEMP1
                                CLR     TEMP2
                                CLR     TEMP3
                                BITB    #BIT0,MESDATA+1 ;BIT 0 = 1 ?
                                BEQ     10$             ;NO,BRANCH
                                INC     TEMP1           ;SET IT
                        10$:    BITB    #BIT1,MESDATA+1 ;BIT 1 =1 ?
                                BEQ     20$             ;NO,BRANCH
                                INC     TEMP2           ;SET IT
                        20$:    BITB    #BIT2,MESDATA+1 ;BIT2 = 1 ?
                                BEQ     30$             ;NO,BRANCH
                                INC     TEMP3           ;SET IT
                        30$:    PRINTS  MES,<B,MESDATA>,<B,TEMP1>,<B,TEMP2>,<B,TEMP3>
                                                                        CLR     -(SP)
                                                                        BISB    TEMP3,(SP)
                                                                        CLR     -(SP)
                                                                        BISB    TEMP2,(SP)
                                                                        CLR     -(SP)
                                                                        BISB    TEMP1,(SP)
                                                                        CLR     -(SP)
                                                                        BISB    MESDATA,(SP)
                                                                        MOV     MES,-(SP)
                                                                        MOV     #5,-(SP)
                                                                        MOV     SP,R0
                                                                        TRAP    C$PNTS
                                                                        ADD     #14,SP
                                RETURN
```

```
                                .SBTTL          DUMP EVENT LOG

                        REPLOG: MOV     R2,-(SP)        ;SAVE R2,R3,R4 ON THE STACK
                                MOV     R3,-(SP)
                                MOV     R4,-(SP)

                                MOV     EVTPTR,R2       ;MAKE R2 A POINTER TO EVENT TABLE
                                CMP     EVTLOG,#-1      ;SEE IF EVENT TABLE IS EMPTY
                                BNE     RPT0            ;BR IF NO
                                PRINTS  #NULEVT         ;IF EMPTY TELL OPRERATOR.
                                                                        MOV     #NULEVT,-(SP)
                                                                        MOV     #1,-(SP)
                                                                        MOV     SP,R0
                                                                        TRAP    C$PNTS
                                                                        ADD     #4,SP
                                JMP     ENDEVT          ;AND END

                        RPT:    SUB     #12,R2          ;NOW POINT BACK TO TOP OF ENTRY U
                                                        ;JUST PRINTED

                                CMP     R2,#EVTLOG      ;POINTING TO TOP OF EVNT LOG QUEUE?
                                BNE     RPT1            ; BR IF NO
                                MOV     #EVTEND,R2      ;SET R2 TO POINT TO BOTTOM OF LOG
                                CMP     -2(R2),#-1
                                BNE     RPT0            ;IF END OF LOG IS NOT EMPTY
                                JMP     ENDEVT          ;CONTINUE...ELSE EXIT

                        RPT1:   CMP     R2,EVTPTR       ;ARE WE BACK TO POINTER?
                                BNE     RPT0            ;IF NOT CONTINUE
                                JMP     ENDEVT          ;IF SO EXIT....

                        RPT0:   SUB     #12,R2          ;POINT R2 TO START OF ENTRY
                        RPTAA:  PRINTS  #EVTF0          ;PRINT EVENT ENTRY HEADER
                                                                        MOV     #EVTF0,-(SP)
                                                                        MOV     #1,-(SP)
                                                                        MOV     SP,R0
                                                                        TRAP    C$PNTS
                                                                        ADD     #4,SP
                                MOVB    (R2)+,R3        ;PUT EVENT TYPE INTO R3
                                MOVB    (R2)+,EVTTCK
                                MOVB    (R2)+,EVTSEC    ;PUT EVENT TIME (TICKS,SECS,MINS IN TEMP LOC.S)
                                MOVB    (R2)+,EVTMIN
                                PRINTS  #EVTF1,EVTMIN,EVTSEC,EVTTCK,EVTLST(R3)  ;PRINT EVENT TIME AND DESCRIPT.
                                                                        MOV     EVTLST(R3),-(SP)
                                                                        MOV     EVTTCK,-(SP)
                                                                        MOV     EVTSEC,-(SP)
                                                                        MOV     EVTMIN,-(SP)
                                                                        MOV     #EVTF1,-(SP)
                                                                        MOV     #5,-(SP)
                                                                        MOV     SP,R0
                                                                        TRAP    C$PNTS
                                                                        ADD     #14,SP
```

```
3726  022274  000173  007654                  JMP     @RPTDSP(R3)     ;DISPATCH TO DECODING SECTION FOR SPECIFIC TYPE
3727
3728  022300  012237  007646  RPTTXQ: MOV     (R2)+,EVTADD    ;STORE MESSAGE ADDRESS FOR PRINTING
3729  022304  012237  007650          MOV     (R2)+,EVTBCT    ;STORE BYTE COUNT FOR PRINTING
3730  022310  012203                  MOV     (R2)+,R3        ;STORE MODEM STATUS FOR PRINTING
3731  022312                          PRINTS  #EVTF2,EVTADD,EVTBCT    ;PRINT ADDR,BYTE CNT
3732  022312  013746  007650                                                  MOV     EVTBCT,-(SP)
3733  022316  013746  007646                                                  MOV     EVTADD,-(SP)
3734  022322  012746  015700                                                  MOV     #EVTF2,-(SP)
3735  022326  012746  000003                                                  MOV     #3,-(SP)
3736  022332  010600                                                          MOV     SP,R0
3737  022334  104416                                                          TRAP    C$PNTS
3738  022336  062706  000010                                                  ADD     #10,SP
3739  022342  004737  023016                  JSR     PC,RPTMSB       ;GO PRINT MODEM STATUS
3740  022346  000137  022126                  JMP     RPT             ;GO BACK FOR NEXT EVENT ENTRY
3741
3742  022352  012237  007652  RPTDER: MOV     (R2)+,EVTTMP    ;GET ADDRESS OF DEVICE INFO MESSAGE
3743  022356  012237  007704          MOV     (R2)+,DEV1      ;STORE DEVICE REG CONTENTS FOR PRINTING
3744  022362  012237  007706          MOV     (R2)+,DEV2
3745  022366                          PRINTS  #EVTF3,EVTTMP   ;PRINT DEV.CE REG CONTENTS.
3746  022366  013746  007652                                                  MOV     EVTTMP,-(SP)
3747  022372  012746  015752                                                  MOV     #EVTF3,-(SP)
3748  022376  012746  000002                                                  MOV     #2,-(SP)
3749  022402  010600                                                          MOV     SP,R0
3750  022404  104416                                                          TRAP    C$PNTS
3751  022406  062706  000006                                                  ADD     #6,SP
3752  022412                          PRINTS  #EVTF3C,DEV1,DEV2
3753  022412  013746  007706                                                  MOV     DEV2,-(SP)
3754  022416  013746  007704                                                  MOV     DEV1,-(SP)
3755  022422  012746  015764                                                  MOV     #EVTF3C,-(SP)
3756  022426  012746  000003                                                  MOV     #3,-(SP)
3757  022432  010600                                                          MOV     SP,R0
3758  022434  104416                                                          TRAP    C$PNTS
3759  022436  062706  000010                                                  ADD     #10,SP
3760  022442  000137  022126                  JMP     RPT             ;GO BACK FOR NEXT EVENT ENTRY
3761
3762  022446  005037  007704  RPTDVI: CLR     DEV1
3763  022452  005037  007706          CLR     DEV2            ;CLEAR UPPER BYTES OF DEV1 & DEV2 BEFORE USE
3764  022456  112237  007704          MOVB    (R2)+,DEV1      ;STORE SETUP OPERATION PARAMETERS FOR PRINTING
3765  022462  112237  007706          MOVB    (R2)+,DEV2
3766  022466  012237  007710          MOV     (R2)+,DEV3
3767  022472  012237  007712          MOV     (R2)+,DEV4
3768  022476  010246                  MOV     R2,-(SP)        ;SAVE R2 ON THE STACK
3769  022500  004737  023714          JSR     PC,SHWOP        ;GO PRINT MODE, MAINT-LOOP TYPE, PARAMTERS.
3770  022504  012602                  MOV     (SP)+,R2        ;RESTORE R2
3771  022506  000137  022126          JMP     RPT             ;GO BACK FOR NEXT EVENT ENTRY
3772
3773                          ;;REPORT END OF PASS OR ^C ABORT
3774  022512  RPTABO:
3775  022512  012237  007646  RPTEOP: MOV     (R2)+,EVTADD    ;PASSES
3776  022516  012237  007650          MOV     (R2)+,EVTBCT    ;ERRORS
3777  022522  012237  007652          MOV     (R2)+,EVTTMP    ;START TIME OUTS
3778  022526                          PRINTS  #EVTF4B,EVTADD,EVTBCT,EVTTMP    ;PRINT ADDR,RXBYTES,CMPBYTES.
3779  022526  013746  007652                                                  MOV     EVTTMP,-(SP)
3780  022532  013746  007650                                                  MOV     EVTBCT,-(SP)
3781  022536  013746  007646                                                  MOV     EVTADD,-(SP)
```

```
                                                                                MOV     #EVTF4B,-(SP)
                                                                                MOV     #4,-(SP)
                                                                                MOV     SP,R0
                                                                                TRAP    C$PNTS
                                                                                ADD     #12,SP
                        JMP     RPT             ;THEN GO GET NEXT EVENT ENTRY

RPTDDE:                 MOV     (R2)+,EVTADD    ;STORE MESSAGE ADDRESS FOR PRINTING
                        MOV     (R2)+,EVTBCT    ;STORE BYTE COUNT FOR PRINTING
                        MOV     (R2)+,EVTTMP    ;STORE TOTAL # OF CMP ERRORS
                        PRINTS  #EVTF4,EVTADD,EVTBCT,EVTTMP     ;PRINT ADDR, BYTE CNT, # CMP ERRS
                                                                                MOV     EVTTMP,-(SP)
                                                                                MOV     EVTBCT,-(SP)
                                                                                MOV     EVTADD,-(SP)
                                                                                MOV     #EVTF4,-(SP)
                                                                                MOV     #4,-(SP)
                                                                                MOV     SP,R0
                                                                                TRAP    C$PNTS
                                                                                ADD     #12,SP
                        JMP     RPT             ;THEN GO GET NEXT EVENT ENTRY

RPTDLE:
RPTDCK:                 MOV     (R2)+,EVTADD    ;STORE MSG ADDR FOR PRINT
                        MOV     (R2)+,EVTBCT    ;STORE BYTE COUNT
                        MOV     (R2)+,EVTTMP    ;STORE BYTE COUNT COMP
                        PRINTS  #EVTF4A,EVTADD,EVTBCT,EVTTMP    ;PRINT ADDR,RXBYTES,CMPBYTES.
                                                                                MOV     EVTTMP,-(SP)
                                                                                MOV     EVTBCT,-(SP)
                                                                                MOV     EVTADD,-(SP)
                                                                                MOV     #EVTF4A,-(SP)
                                                                                MOV     #4,-(SP)
                                                                                MOV     SP,R0
                                                                                TRAP    C$PNTS
                                                                                ADD     #12,SP

                        JMP     RPT             ;THEN GO GET NEXT EVENT ENTRY


RPTMSC:                 MOV     (R2)+,EVTTMP
                        PRINTS  #EVTF3,EVTTMP   ;PRINT CHANGE TYPE
                                                                                MOV     EVTTMP,-(SP)
                                                                                MOV     #EVTF3,-(SP)
                                                                                MOV     #2,-(SP)
                                                                                MOV     SP,R0
                                                                                TRAP    C$PNTS
                                                                                ADD     #6,SP
                        MOV     (R2)+,R3        ;PUT OLD MODEM STATUS IN R3 FOR PRINTING
                        JSR     PC,RPTMSB       ;GO PRINT OLD MODEM STATUS
                        PRINTS  #EVMOCG         ;GO PRINT "CHANGED TO:"
                                                                                MOV     #EVMOCG,-(SP)
                                                                                MOV     #1,-(SP)
                                                                                MOV     SP,R0
                                                                                TRAP    C$PNTS
```

```
3838  022770  062706  000004                                                                  ADD     #4,SP
3839  022774  012203                          MOV     (R2)+,R3        ;PUT NEW MODEM STATUS IN R3 FOR PRINTING
3840  022776  004737  023016                  JSR     PC,RPTMSB       ;GO PRINT NEW MODEM STATUS
3841  023002  000137  022126          RFTMSE: JMP     RPT             ;THEN GO GET NEXT EVENT
3842
3843
3844  023006  012604                  ENDEVT: MOV     (SP)+,R4        ;RESTORE R4,R3,R2
3845  023010  012603                          MOV     (SP)+,R3
3846  023012  012602                          MOV     (SP)+,R2
3847  023014  000207                          RTS     PC              ;RETURN TO CALLING ROUTINE
3848
3849
3850                                  ;REPORT MODEM STATUS SUBROUTINE
3851                                  ;       PART OF STATISICAL REPORTING (DUMPING EVENT LOG)
3852
3853  023016                          RPTMSB: PRINTS  #EVMOHD                 ;PRINT MODEM STATUS HEADER
3854  023016  012746  016410                                                                  MOV     #EVMOHD,-(SP)
3855  023022  012746  000001                                                                  MOV     #1,-(SP)
3856  023026  010600                                                                          MOV     SP,R0
3857  023030  104416                                                                          TRAP    C$PNTS
3858  023032  062706  000004                                                                  ADD     #4,SP
3859  023036  012704  007560                  MOV     #MOBITS,R4      ;MAKE R4 A POINTER TO MODEM SIG. BIT DEF. TABLE
3860  023042  012705  007574                  MOV     #MOMSGS,R5      ;MAKE R5 A POINTER TO MODEM MSG. POSITION TABLE
3861  023046  005714                  6$:     TST     (R4)            ;SEE IF BIT AVAIABLE FROM DEVICE
3862  023050  001004                          BNE     7$              ;BR IF THAT MODEM SIG. AVAIABLE
3863  023052  112735  000130                  MOVB    #'X,@(R5)+      ;ELSE PUT 'X' IN REPORT IF SIGNAL NOT AVAILABLE
3864  023056  005724                          TST     (R4)+           ;BUMP R4 TO POINT TO NEXT BIT DEFINITION
3865  023060  000407                          BR      9$              ;GO SEE IF CHECKED ALL MODEM SIGNALS
3866  023062  032403                  7$:     BIT     (R4)+,R3        ;IF THERE, SEE IF THAT BIT IN DEVICE'S ENTRY=1
3867  023064  001403                          BEQ     8$              ;BR IF BIT (SIGNAL) VALUE =0
3868  023066  112735  000061                  MOVB    #'1,@(R5)+      ;IF=1, PUT '1' IN REPORT MESSAGE
3869  023072  000402                          BR      9$              ;GO SEE IF ALL MODEM SIGNALS CHECKED
3870  023074  112735  000060          8$:     MOVB    #'0,@(R5)+      ;IF BIT(SIGNAL)=0, PUT '0' IN REPORT MESSAGE
3871  023100  020427  007574          9$:     CMP     R4,#MOBITE      ;SEE IF ALL BITS(SIGNALS) CHECKED
3872  023104  002760                          BLT     6$              ;LOOP UNTIL ALL SIGNALS(BITS) CHECKED
3873  023106                                  PRINTS  #EVMOST         ;THEN PRINT MODEM SIGNAL VALUE MESSAGE
3874  023106  012746  016465                                                                  MOV     #EVMOST,-(SP)
3875  023112  012746  000001                                                                  MOV     #1,-(SP)
3876  023116  010600                                                                          MOV     SP,R0
3877  023120  104416                                                                          TRAP    C$PNTS
3878  023122  062706  000004                                                                  ADD     #4,SP
3879  023126  000207                          RTS     PC              ;RETURN TO EVENT DECODING
3880
3881
```

```
                                .SBTTL          DUMP BYTES OR WORDS


                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       DUMPSR - DUMP BYTES OR WORDS SUBROUTINE
                                ;
                                ;       THIS SUBROUTINE PRINTS THE CONTENTS OF THE LOCATIONS BETWEEN
                                ;       A STARTING AND END ADDRESS IN LOCS. "STADD" AND "ENADD".
                                ;       THE WORD OR BYTE CONTENTS ARE PRINTED 8 TO A LINE WITH THE
                                ;       ADDRESS OF THE FIRST BYTE AS THE FIRST 6 OCTAL CHARS. FOLLOWED
                                ;       BY A SEMICOLON.
                                ;
                                ; INPUTS:
                                ;       STADD=  STARTING ADDRESS (FIRST LOC. TO PRINT)
                                ;       ENADD=  END ADDRESS (LAST LOCATION TO DUMP)
                                ;       BYTBIT= 1 IF SUPPOSED TO PRINT "BYTES"
                                ;               0 IF SUPPOSED TO PRINT "WORDS"
                                ;
                                ; OUTPUTS:
                                ;       CONTENTS OF A RANGE OF LOC.S PRINTED ON THE OPERATORS CONSOLE.
                                ;
                                ; CALLING SEQUENCE:
                                ;       JSR PC,DUMPSR           ;CALL DUMP BYTES SUBROUTINE
                                ;
                                ;--

023130  013702  006510  DUMPSR: MOV     STADD,R2        ;SET R2 UP TO STARTING ADDR.
023134  005003          DUM4:   CLR     R3              ;CLEAR R3
023136                          PRINTF  #BASM1,R2       ;PRINT ADDRESS
023136  010246                                                  MOV     R2,-(SP)
023140  012746  015507                                          MOV     #BASM1,-(SP)
023144  012746  000002                                          MOV     #2,-(SP)
023150  010600                                                  MOV     SP,R0
023152  104417                                                  TRAP    C$PNTF
023154  062706  000006                                          ADD     #6,SP
023160  005737  006514  DUM3:   TST     BYTBIT          ;IS THIS BYTE OR WORD
023164  001416                  BEQ     DUM1            ;BR IF WORD
023166  112237  006534          MOVB    (R2)+,TEMP      ;MOV BYTE TO TEMP
023172                          PRINTF  #BASM3,<B,TEMP> ;PRINT BYTE
023172  005046                                                  CLR     -(SP)
023174  153716  006534                                          BISB    TEMP,(SP)
023200  012746  015471                                          MOV     #BASM3,-(SP)
023204  012746  000002                                          MOV     #2,-(SP)
023210  010600                                                  MOV     SP,R0
023212  104417                                                  TRAP    C$PNTF
023214  062706  000006                                          ADD     #6,SP
023220  000411                  BR      DUM2
023222                  DUM1:   PRINTF  #BASM2,(R2)+    ;PRINT WORD
023222  012246                                                  MOV     (R2)+,-(SP)
023224  012746  015500                                          MOV     #BASM2,-(SP)
023230  012746  000002                                          MOV     #2,-(SP)
023234  010600                                                  MOV     SP,R0
023236  104417                                                  TRAP    C$PNTF
023240  062706  000006                                          ADD     #6,SP
023244  020237  006512  DUM2:   CMP     R2,ENADD        ;COMPARE FOR LAST ADD
```

```
 3938  023250  003005                    BGT     DUMEX           ;IF DONE EXIT
 3939  023252  005203                    INC     R3              ;ELSE BUMP R3
 3940  023254  022703  000010            CMP     #8.,R3          ;HAVE WE PRINTED 8 ACCROSS
 3941  023260  001725                    BEQ     DUM4            ;IF SO GO BACK TO 4
 3942  023262  000736                    BR      DUM3            ;ELSE GO BACK AND PRINT ANOTHER
 3943                                                            ;BYTE OR WORD
 3944  023264  000207            DUMEX:  RTS     PC              ;RETURN TO CALLER
 3945
```

```
3946                                    .SBTTL          UPDATE TOTAL CHAR. COUNT SUBROUTINE
3947
3948                                    ;++
3949                                    ; FUNCTIONAL DESCRIPTION:
3950                                    ;               UPDATES TOTAL CHAR. COUNT TOTCC BASED ON CURCC.
3951                                    ;               LAST MESSAGE IS TRUNCATED TO FIT INTO THE
3952                                    ;               BUFFER IF TOTAL CHAR. COUNT EXCEEDS 'BUFLIM'  A MESSAGE
3953                                    ;               IS PRINTED TELLING THE OPERATOR THE TRUNCATION OCCURED.
3954                                    ;
3955                                    ; INPUTS:
3956                                    ;               CURCC=  CHAR. COUNT OF MESSAGE BEING ADDED
3957                                    ;               TOTCC=  TOTAL CHAR COUNT OF BUFFER ITS BEING ADDED TO
3958                                    ;
3959                                    ; OUTPUTS:
3960                                    ;               MESSAGE TO OPERATOR IF MESSAGE TRUNCATED TO FIT
3961                                    ;
3962                                    ; FUNCTIONAL SIDE EFFECTS:
3963                                    ;               LOCATION "TEMP" USED FOR CALCULATIONS
3964                                    ; CALLING SEQUENCE:
3965                                    ;               JSR     PC,ADCC         ;UPDATED TOTAL CHAR. COUNT
3966                                    ;--
3967
3968
3969  023266  063737  006520  006530  ADDCC:  ADD     CURCC,TOTCC     ;ADD CURRENT TO TOTAL
3970  023274  022737  001000  006530           CMP     #BUFLIM,TOTCC   ; COMPARE TO 'BUFLIM'
3971  023302  103027                           BHIS    ADDC1           ;IF NOT MORE THEN 'BUFLIM' EXIT
3972
3973                                    ; PRINT MESSAGE AND TRUNCATE COUNT
3974
3975  023304                            PRINTF  #MSGTRU
3976  023304  012746  014424                                                    MOV     #MSGTRU,-(SP)
3977  023310  012746  000001                                                    MOV     #1,-(SP)
3978  023314  010600                                                            MOV     SP,R0
3979  023316  104417                                                            TRAP    C$PNTF
3980  023320  062706  000004                                                    ADD     #4,SP
3981  023324  163737  006520  006530           SUB     CURCC,TOTCC     ;SUB CURRENT FROM TOTAL
3982  023332  012737  001000  006534           MOV     #BUFLIM,TEMP    ;MOV 'BUFLIM' TO TEMP
3983  023340  163737  006530  006534           SUB     TOTCC,TEMP      ;SUB TOTAL FROM 'BUFLIM'
3984  023346  013737  006534  006520           MOV     TEMP,CURCC      ;AND ESTABLISH NEW CURRENT
3985  023354  063737  006520  006530           ADD     CURCC,TOTCC     ;ADD "ADJUSTED CURRENT" TO TOTAL CHAR. CNT.
3986  023362  000207                  ADDC1:   RTS     PC              ;RETURN TO CALLER
3987
```

```
                        .SBTTL          BUILD MESSAGE BUFFERS SUBROUTINE

                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       BLDBUF--  BUILD POINTER TABLE AND BUFFERS
                        ;
                        ;       THIS SUBROUTINE ADDS A MESSAGE TO THE TRANSMIT OR EXPECT LIST
                        ;       USING THE POINTER, BYTE COUNT, AND ADDRESS PASSED TO IT.
                        ;
                        ; INPUTS:
                        ;       CURCC=  CHAR. COUNT OF MESSAGE TO BE ADDED
                        ;       CURADD= ADDRESS OF MESSAGE TO BE ADDED
                        ;       CPTR=   ADDRESS OF POINTER TABLE WORD WHERE MESSAGE POINTERS ARE
                        ;                       TO BE BUILT
                        ;       MSGTYP= VALUE TO USE AS AN INDEX TO FIND SOURCE OF MESSAGE DATA
                        ;                       INDEX INTO DMSGCT() AND DMSGAD().
                        ; OUTPUTS:
                        ;       A MESSAGE ADDED TO EITHER TXBUF OR CMPBUF
                        ;       APPROPRIATE POINTERS IN PTRTAB POINTER TABLE
                        ;
                        ; CALLING SEQUENCE:
                        ;       JSR PC,BLDBUF           ;BUILD MESSAGE IN BUFFER AND ADD PTRS.
                        ;--

023364                  BLDBUF:
023364  010246                  MOV     R2,-(SP)        ;SAVE R2 AND R3 ON THE STACK
023366  010346                  MOV     R3,-(SP)
023370  013702  006524          MOV     CPTR,R2

023374  013722  006526  BLDB1:  MOV     CURADD,(R2)+    ;PUT CURRENT ADD ON POINTER TAB
023400  013722  006520          MOV     CURCC,(R2)+     ;PUT CURRENT CC ON POINTER TAB
023404  010237  006524          MOV     R2,CPTR         ;PUT UPDATED R2 BACK TO CURRENT POINT
023410  013702  006516          MOV     MSGTYP,R2       ;GET MESSAGE TYPE TO USE AS INDEX
023414  006302                  ASL     R2              ;DOUBLE FOR WORD INDEX
023416  013737  006526  006534  MOV     CURADD,TEMP     ;MOVE CURRENT ADD TO TEMP
023424  063737  006520  006534  ADD     CURCC,TEMP      ;ADD CHAR COUNT TO IT TO GET END
023432  013703  006526          MOV     CURADD,R3       ;SET R3 TO CURRENT START ADD
023436  016237  002150  006540  BLDB2:  MOV     DMSGCT(R2),TEMP2        ;GET BYTE COUNT
023444  016204  002172          MOV     DMSGAD(R2),R4   ;PUT STARTING FROM ADD IN R4
023450  060437  006540          ADD     R4,TEMP2        ;ADD IT TO TEMP2 TO GET END OF FROM
023454  112423          BLDB3:  MOVB    (R4)+,(R3)+     ;MOV BYTE FROM PATTERN TO BUFFER
023456  020337  006534          CMP     R3,TEMP         ;ALL DONE?
023462  001404                  BEQ     BLDBEX          ;IF SO EXIT
023464  020437  006540          CMP     R4,TEMP2        ;IS PATTERN COUNT EXPIRED
023470  001762                  BEQ     BLDB2           ;IF SO GO START AGAIN
023472  000770                  BR      BLDB3           ;IF NOT GET ANOTHER BYTE
023474  063737  006520  006526  BLDBEX: ADD     CURCC,CURADD    ;BUMP CURADD
023502  012603                  MOV     (SP)+,R3        ;RESTORE R3 AND R2
023504  012602                  MOV     (SP)+,R2
023506  000207                  RTS     PC              ;RETURN TO CALLER
```

```
 CZDCLB DUP-11 DATA COMM. LINK TEST     MACY11 30A(1052)  20-JUL-83  13:19  PAGE 100
CZDCLB.P11    19-JUL-83 17:12          CREATE FACSIMILE OF TX BUFFER AND MESSAGE LIST

  4039                                 .SBTTL  CREATE FACSIMILE OF TX BUFFER AND MESSAGE LIST
  4040
  4041                                 ;++
  4042                                 ;FUNCTIONAL DESCRIPTION:
  4043                                 ;       FACSIMILE: THIS ROUTINE IS USED TO CREATE A FACSIMILE OF THE
  4044                                 ;                  OF THE TRANSMIT LIST AND TRANSMIT BUFFER IN THE
  4045                                 ;                  EXPECTED LIST AND EXPECTED BUFFER. THE ROUTINE IS
  4046                                 ;                  NORMALLY CALLED WHEN USER COMMAND "SET E [XPECT]=
  4047                                 ;                  T [RANSMIT] IS ENTERED.
  4048                                 ;
  4049                                 ;       CALLING SEQUENCE: JSR   PC,FACSIMILE
  4050                                 ;
  4051                                 ;--
  4052                                 ;       DEFINITIONS  CMPBUF = EXPECTED DATA BUFFER  HOLDS MAX 512 BYTES
  4053                                 ;                    TXBUF  = TRANSMIT DATA BUFFER  HOLDS MAX 512 BYTES
  4054                                 ;                    TTOTCC = NUMBER OF BYTES IN TXBUF
  4055                                 ;                    PTRTAB = TOP OF MESSAGE LIST POINTER TABLE
  4056                                 ;                    CTOTCC = NUMBER OF BYTES IN EXPECT MESSAGE
  4057                                 ;                    CMPTOT = NUMBER OF EXPECTED MESSAGES
  4058                                 ;                    CMPPTR = EXPECTED MESSAGE LIST POINTER
  4059                                 ;                    TXPTR  = TRANSMIT MESSAGE LIST POINTER
  4060                                 ;                    TXMTOT = NUMBER OF TRANSMIT MESSAGES
  4061                                 ;                    CCURAD = STORAGE ADDRESS OF MESSAGE IN CMPBUF
  4062                                 ;                    MSGLIN = MAXIMUM NUMBER OF MESSAGES THAT CAN BE STORED
  4063                                 ;
  4064                                 ;       BEGIN FACSIMILE ROUTINE
  4065                                 ;       (*COPY TXBUF ==> CMPBUF*)
  4066                                 ;       ..SAVE R1
  4067                                 ;       ..INIT R1
  4068                                 ;       ..REPEAT
  4069                                 ;       ....[CMPBUF]R1=[TXBUF]R1
  4070                                 ;       ....R1=R1+1
  4071                                 ;       ..UNTIL R1 = BUFLIM
  4072                                 ;
  4073                                 ;       (*NOW CALCULATE EXPECT LIST MESSAGE POINTER*)
  4074                                 ;       ..CMPPTR = PTRTAB + (2 * MSGLIM)
  4075                                 ;
  4076                                 ;       (*NOW PRIME THE WHILE - DO LOOP*)
  4077                                 ;       ..TXPTR = PTRTAB
  4078                                 ;       ..CCURAD = CMPBUF
  4079                                 ;       ..TXPTR = TXPTR + 2
  4080                                 ;       ..CTOTCC = [TXPTR]
  4081                                 ;       ..CMPTOT = 0
  4082                                 ;       ..WHILE TXMTOT <> CMPTOT DO
  4083                                 ;       ....[CMPPTR] = CCURAD
  4084                                 ;       ....CMPPTR = CMPPRT + 2
  4085                                 ;       ....[CMPPTR] = CTOTCC
  4086                                 ;       ....TXPTR = TXPTR + 4
  4087                                 ;       ....CCURAD = CCURAD + CTOTCC
  4088                                 ;       ....CTOTCC = [TXPTR]
  4089                                 ;       ....CMPPTR = CMPPTR + 2
  4090                                 ;       ....CMPTOT = CMPTOT + 1
  4091                                 ;       ..END WHILE DO
  4092                                 ;       ..CTOTCC = TTOTCC
  4093                                 ;       END FACSIMILE ROUTINE
  4094
```

```
 4095  023510                                FACSIMILE:
 4096
 4097  023510  010146                              MOV     R1,-(SP)                ;SAVE R1
 4098  023512  005001                              CLR     R1                      ;INIT R1
 4099  023514  116161  003150  005150  10$:       MOVB    TXBUF(R1),CMPBUF(R1)    ;COPY TX BUFFER TO EXPECTED BUFFER
 4100  023522  005201                              INC     R1                      ;BUMP INDEX
 4101  023524  020127  001000                      CMP     R1,#BUFLIM              ;ALL DATA COPIED ?
 4102  023530  001371                              BNE     10$                     ;NO,BRANCH
 4103
 4104  023532  012701  000017          20$:       MOV     #MSGLIM,R1              ;MESSAGE LIMIT
 4105  023536  006301                              ASL     R1                      ;MULTIPLY BY 2
 4106  023540  006301                              ASL     R1                      ;MULTIPLY BY 2
 4107  023542  012737  006150  006444              MOV     #PTRTAB,CMPPTR          ;TOP OF POINTER TABLE
 4108  023550  060137  006444                      ADD     R1,CMPPTR               ;START OF EXPECTED POINTER TABLE
 4109  023554  005001                              CLR     R1                      ;INIT R1
 4110
 4111                                              ;SET UP WHILE - DO LOOP
 4112  023556  012737  006150  006442              MOV     #PTRTAB,TXPTR           ;TX POINTER NOW AT TOP OF TABLE
 4113  023564  012737  005150  006452              MOV     #CMPBUF,CCURAD          ;TRANSFER ADDRESS OF 1ST MESSAGE
 4114  023572  062737  000002  006442              ADD     #2,TXPTR                ;BUMP POINTER
 4115  023600  017737  162636  006450              MOV     @TXPTR,CTOTCC           ;BYTE COUNTER 1ST MESSAGE
 4116  023606  005037  006446                      CLR     CMPTOT                  ;INIT EXPECTED MESSAGE COUNT
 4117
 4118                                              ;WHILE TX MESSAGE TOTAL <> EXPECTED MESSAGE TOTAL DO
 4119  023612  023737  006462  006446  30$:       CMP     TXMTOT,CMPTOT           ;ALL MESSAGES COPIED ?
 4120  023620  001430                              BEQ     40$                     ;YES,BRANCH
 4121  023622  013777  006452  162614              MOV     CCURAD,@CMPPTR          ;TRANSFER ADDRESS OF MESSAGE
 4122  023630  062737  000002  006444              ADD     #2,CMPPTR               ;BUMP POINTER
 4123  023636  013777  006450  162600              MOV     CTOTCC,@CMPPTR          ;BYTE COUNT OF MESSAGE
 4124  023644  062737  000004  006442              ADD     #4,TXPTR                ;BUMP TX MESSAGE POINTER
 4125  023652  063737  006450  006452              ADD     CTOTCC,CCURAD           ;CALC. TRANSFER ADDRESS
 4126  023660  017737  162556  006450              MOV     @TXPTR,CTOTCC           ;BYTE COUNT NEXT MESSAGE
 4127  023666  062737  000002  006444              ADD     #2,CMPPTR               ;BUMP POINTER
 4128  023674  005237  006446                      INC     CMPTOT                  ;INCREMENT MESSAGE COUNT
 4129  023700  000744                              BR      30$                     ;DO IT AGAIN
 4130                                              ;END WHILE - DO
 4131  023702  013737  006464  006450  40$:       MOV     TTOTCC,CTOTCC           ;COPY TOTAL CHARACTER COUNT
 4132
 4133                                              ;END ROUTINE
 4134  023710  012601                              MOV     (SP)+,R1                ;RESTORE R1
 4135  023712  000207                              RTS     PC                      ;RETURN
 4136
 4137
```

```
                        .SBTTL          SHOW MODE OF OPERATION, LOOP TYPE AND QUALIFIERS

                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       SHWOP - SHOW MODE OF OPERATION, LOOP, QULAIFIERS
                        ;               PRINTED ON THE OPERATOR'S CONSOLE.
                        ;
                        ; INPUTS:
                        ;       DEV1=   MODE TYPE (MODTYP)
                        ;       DEV2=   MAINT LOOP TYPE (MLTYP)
                        ;       DEV3=   "RUN PASS" COUNT (RPASS) - COUNT DOWN
                        ;       DEV4=   PARAMTERS WORD (PARAM)
                        ;
                        ; IMPLICIT INPUTS:
                        ;       MODES= TABLE OF ADDRESSES OF MODE NAME STRINGS
                        ;       LOOPS= TABLE OF ADDRESSES OF LOOP TYPE NAMES
                        ;
                        ; CALLING SEQUENCE:
                        ;       JSR PC,SHWOP
                        ;--

023714  013702  007704          SHWOP:  MOV     DEV1,R2         ;GET THE MODE TYPE IN R2
023720  006302                          ASL     R2              ;MAKE IT A WORD TABLE OFFSET
023722  016237  003102  006534          MOV     MODES(R2),TEMP  ;GET ADDRESS OF MODE-IN-ASCII
023730  013702  007706                  MOV     DEV2,R2         ;GET MAINTENANCE LOOP TYPE
023734  006302                          ASL     R2
023736  012737  013724  006542          MOV     #LP00,TEMP3     ;LOAD TEMP3 TO POINT TO "/LOOP="
023744  005702                          TST     R2              ;SEE IF /LOOP=XXXXX OR NONE
023746  001003                          BNE     10$             ; BR IF /LOOP= OF SOME KIND
023750  012737  013723  006542          MOV     #LP0,TEMP3      ;IF NO LOOP THEN DON'T PRINT "/LOOP="
023756  016237  003120  006536  10$:    MOV     LOOPS(R2),TEMP1 ;GET ADDRESS OF LOOP-IN-ASCII
023764  013737  007710  006540          MOV     DEV3,TEMP2      ;GET NUMBER OF PASSES
023772                                  PRINTS  #SHF0,TEMP,TEMP3,TEMP1,TEMP2
023772  013746  006540                                                  MOV     TEMP2,-(SP)
023776  013746  006536                                                  MOV     TEMP1,-(SP)
024002  013746  006542                                                  MOV     TEMP3,-(SP)
024006  013746  006534                                                  MOV     TEMP,-(SP)
024012  012746  014507                                                  MOV     #SHF0,-(SP)
024016  012746  000005                                                  MOV     #5,-(SP)
024022  010600                                                          MOV     SP,R0
024024  104416                                                          TRAP    C$PNTS
024026  062706  000014                                                  ADD     #14,SP

024032  005002                          CLR     R2              ;NOW SET UP FOR QUALIFIERS IN ASCII
024034  012737  014003  006534          MOV     #PST,TEMP
024042  032737  000001  007712          BIT     #STATB,DEV4     ;SEE IF /STATUS OR /NOSTATUS
024050  001003                          BNE     1$              ;BR IF /STATUS
024052  012737  014001  006534          MOV     #PNST,TEMP
024060  012737  014014  006536  1$:     MOV     #PCK,TEMP1
024066  032737  000002  007712          BIT     #DATCKB,DEV4    ;SEE IF /CHECK OR /NOCHECK
024074  001003                          BNE     2$              ;BR IF /CHECK
024076  012737  014012  006536          MOV     #PNCK,TEMP1
024104  012737  014024  006540  2$:     MOV     #PEC,TEMP2
024112  032737  000004  007712          BIT     #ECHOB,DEV4     ;SEE IF /ECHO OR /NOECHO
024120  001003                          BNE     4$              ;BR IF /ECHO
024122  012737  014022  006540          MOV     #PNEC,TEMP2
```

```
 4194
 4195  024130  012737  014043  006544  4$:     MOV     #PPR,TEMP4
 4196  024136  032737  000040  007712          BIT     #PROTOB,DEV4    ;SEE OF /PROTOCOL OR /NOPROTOCOL
 4197  024144  001003                          BNE     3$              ;BR IF /PROTOCOL
 4198  024146  012737  014041  006544          MOV     #PNPR,TEMP4
 4199
 4200  024154  012737  014033  006546  3$:     MOV     #PMS,TEMP5
 4201  024162  032737  000010  007712          BIT     #MOCHK,DEV4     ;SEE IF /MODEM OR /NOMODEM
 4202  024170  001003                          BNE     5$              ;BR IF MODEM
 4203  024172  012737  014031  006546          MOV     #PNMS,TEMP5
 4204
 4205
 4206  024200                          5$:     PRINTS  #SHF1,TEMP,TEMP1,TEMP2,TEMP5,TEMP4 ;,TEMP3
 4207  024200  013746  006544                                                          MOV     TEMP4,-(SP)
 4208  024204  013746  006546                                                          MOV     TEMP5,-(SP)
 4209  024210  013746  006540                                                          MOV     TEMP2,-(SP)
 4210  024214  013746  006536                                                          MOV     TEMP1,-(SP)
 4211  024220  013746  006534                                                          MOV     TEMP,-(SP)
 4212  024224  012746  014545                                                          MOV     #SHF1,-(SP)
 4213  024230  012746  000006                                                          MOV     #6,-(SP)
 4214  024234  010600                                                                  MOV     SP,R0
 4215  024236  104416                                                                  TRAP    C$PNTS
 4216  024240  062706  000016                                                          ADD     #16,SP
 4217  024244  000207                          RTS     PC              ;RETURN
 4218
 4219
```

```
                                .SBTTL          TRAVERSE COMMAND LINE SUBROUTINES

                                ;++
                                ;       P$TRV SUBROUITNE
                                ;
                                ;PARSE THE COMMAND LINE SUBROUTINE
                                ;TAKE ACTIONS (VIA ACTION TREE) AS PARSING LINE
                                ;PARSING DIRECTIONS FROM "CLI PARSING NODES"
                                ;   REGS USED:
                                ;
                                ;       R1,R5=SCRATCH                                   P$NUM=NUMERIC CODE FROM DATA
                                ;       R2=ACTION CODE PARAMETER FROM TREE
                                ;       R3=PARSE TREE POINTER
                                ;       R4=INPUT STRING POINTER
                                ; CALLING SEQUENCE:
                                ;       JSR     PC,P$TRV
                                ;--

024246                          P$TRV:
024246  013704  003132                  MOV     P$BUFA,R4
024252  013703  003134                  MOV     P$TREE,R3
024256  105714                 P$TR5:   TSTB    (R4)                    ;SEE IF ANY CHARS LEFT IN INPUT STRING
024260  001441                          BEQ     P$EXIT                  ;BR IF NO
024262  121327  000013                  CMPB    (R3),#11.               ;SEE IF SPECIAL CLI CHAR CODE OR ASCII
024266  003023                          BGT     20$                     ;BR IF REGULAR ASCII CHAR.
024270  111305                          MOVB    (R3),R5                 ;GET SPECIAL CHAR CODE INTO R5
024272  006305                          ASL     R5
024274  016505  024310                  MOV     10$(R5),R5              ;BUILD TRAVERSE ROUTINE ADDRESS
024300  062705  024310                  ADD     #10$,R5
024304  004715                          JSR     PC,(R5)                 ;JSR TO SPECIAL CLI TRAVERSE ROUTINE
024306  000763                          BR      P$TR5                   ;GO SEE IF MORE OF STRING LEFT

024310  000114                 10$:     .WORD   TRVERR-10$              ;TRAVERSE TABLE FOR "CLI FUNTIONS"
024312  000134                          .WORD   TRVEXI-10$              ;1
024314  000152                          .WORD   TRVBR-10$               ;2
024316  000162                          .WORD   TRVBIF-10$              ;3
024320  000204                          .WORD   TRVSPA-10$              ;4
024322  000270                          .WORD   TRVNUM-10$              ;5
024324  000604                          .WORD   TRVALP-10$              ;6
024326  000650                          .WORD   TRVALN-10$              ;7
024330  000270                          .WORD   TRVOCT-10$              ;8
024332  000256                          .WORD   TRVDEC-10$              ;9
024334  000736                          .WORD   TRVSTR-10$              ;10

                                ;NOT A SPECIAL CODE

024336  121314                 20$:     CMPB    (R3),(R4)               ;SEE IF FIRST CHAR OF STRING IS A MATCH
024340  001403                          BEQ     22$                     ;BR IF A MATCH
024342  004737  024406                  JSR     PC,TRVBRC               ;IF NOT A MATCH, GO TAKE MISS BRANCH
024346  000743                          BR      P$TR5                   ; THEN GO BACK PT'G TO MISS NODE
024350  004737  024366         22$:     JSR     PC,TRVACT               ;IF A MATCH, GO DO ACTION DEFINED BY
024354  062703  000004                  ADD     #4,R3                   ; ACTION CODE IN CLI NODE, THEN
                                                                        ; ADJUST PTR TO NEXT CLI NODE
024360  005204                          INC     R4                      ;ADJUST BUF PTR TO NEXT CHAR IF MATCH
024362  000735                          BR      P$TR5
```

```
 4276
 4277  024364  000207                  P$EXIT: RTS     PC                      ;RETURN FROM PARSER
 4278
 4279                                  ;-------------------------------------------------------------------------
 4280
 4281                                  ;GOTO USER ACTION ROUTINE
 4282  024366  116302  000001          TRVACT: MOVB    1(R3),R2                ;GET ACTION CODE FROM CLI NODE
 4283  024372  042702  177400                  BIC     #177400,R2              ;CLEAR ANY SIGN EXTENSION
 4284  024376  013705  003136                  MOV     P$ACT,R5                ;GET ADDRESS OF CLI ACTION ROUTINE
 4285  024402  004715                          JSR     PC,(R5)                 ;GO DO ACTION DEFINED BY CODE
 4286  024404  000207                          RTS     PC                      ;RETURN TO CALLING CODE
 4287
 4288                                  ;TAKE BRANCH IN TREE
 4289  024406  016305  000002          TRVBRC: MOV     2(R3),R5                ;GET BRANCH DISPLACEMENT FROM TREE
 4290  024412  060503                          ADD     R5,R3                   ; AND POINT R3 TO THE "MISS" NODE
 4291  024414  000207                          RTS     PC                      ; RETURN TO P$TRV
 4292
 4293                                  ;NO BRANCH TAKEN
 4294  024416  062703  000004          TRVNOB: ADD     #4,R3                   ;THINGS OK, UPDATE R3 TO POINT TO NEXT
 4295  024422  000207                          RTS     PC                      ; NODE AND RETURN TO P$TRV
 4296
 4297                                  ;-------------------------------------------------------------------------
 4298  024424  004737  024366          TRVERR: JSR     PC,TRVACT               ;TAKE ERROR ACTION
 4299  024430  112737  177777  003147          MOVB    #-1,P$GDBD              ;SET ERROR RETURN FLAG
 4300  024436  005726                          TST     (SP)+                   ;GET RID OF "JSR PUSH TO TRVERR"
 4301  024440  000137  024364                  JMP     P$EXIT                  ;RETURN DIRECT TO EXIT OF P$TRV ROUTINE
 4302
 4303  024444  004737  024366          TRVEXI: JSR     PC,TRVACT               ;TAKE EXIT ACTION
 4304  024450  105037  003147                  CLRB    P$GDBD                  ;SET GOOD/BAD FLAG TO "SUCCESS (0)"
 4305  024454  005726                          TST     (SP)+                   ;GET RID OF "JSR PUSH TO TRVEXI"
 4306  024456  000137  024364                  JMP     P$EXIT                  ;RETURN DIRECT TO EXIT OF P$TRV ROUTINE
 4307
 4308  024462  004737  024366          TRVBR:  JSR     PC,TRVACT               ;GO TAKE BRANCH ACTION
 4309  024466  000137  024406                  JMP     TRVBRC
 4310
 4311  024472  004737  024366          TRVBIF: JSR     PC,TRVACT
 4312  024476  105737  003147                  TSTB    P$GDBD                  ;SEE IF P$GDBD SET OR CLEARED BY ACTION
 4313  024502  001402                          BEQ     1$                      ;IF CLEAR FALL THRU TO NEXT NODE
 4314  024504  000137  024406                  JMP     TRVBRC                  ;ELSE TAKE THE "MISS" BRANCH
 4315  024510  000137  024416          1$:     JMP     TRVNOB                  ;JUST UPDATE TO NEXT NODE IF THINGS OK
 4316
 4317  024514  005005                  TRVSPA: CLR     R5                      ;CLEAR "SPACE OR TAB FOUND" FLAG
 4318  024516  121427  000011          1$:     CMPB    (R4),#11                ;SEE IF CHAR. IN CMD LINE= TAB
 4319  024522  001003                          BNE     2$                      ;BR IF NO, NOT A TAB
 4320  024524  005204                          INC     R4                      ;INC INPUT STRING POINTER
 4321  024526  005205                          INC     R5                      ;INDICATE A TAB FOUND
 4322  024530  000772                          BR      1$                      ;GO CHECK NEXT CHAR
 4323
 4324  024532  121427  000040          2$:     CMPB    (R4),#40                ;SEE IF CHAR. IN CMD LINE= SPACE
 4325  024536  001003                          BNE     10$                     ;BR IF NO, NON-SPACE OR NON-TAB CHAR.
 4326  024540  005204                          INC     R4                      ;INC INPUT STRING POINTER
 4327  024542  005205                          INC     R5                      ;INDICATE A SPACE FOUND
 4328  024544  000764                          BR      1$                      ;GO CHECK NEXT CHAR
 4329  024546  005705                  10$:    TST     R5                      ;SEE IF ANY SPACES OR TABS FOUND
 4330  024550  001404                          BEQ     15$                     ;BR IF NO, TAKE NO ACTION
 4331  024552  004737  024366                  JSR     PC,TRVACT               ;GO TAKE ACTION IF ANY FOUND
```

```
 4332  024556  000137  024416                 JMP     TRVNOB                  ;JUST GO UPDATE R3 TO NEXT NODE IF OK
 4333  024562  000137  024406          15$:   JMP     TRVBRC                  ;TAKE BRANCH (MISS) IF NONE FOUND
 4334
 4335
 4336  024566  012737  000012  003144  TRVDEC: MOV     #10.,P$RADX             ;USE DECIMAL AS RADIX AND ASSUME +
 4337  024574  000137  024606                 JMP     TRVNMA
 4338  024600                          TRVOCT: ;(SAME AS TRVNUM SINCE DEFAULT RADIX IS OCTAL)
 4339  024600  012737  000010  003144  TRVNUM: MOV     #8.,P$RADX              ;USE OCTAL AS RADIX AND ASSUME +
 4340  024606  005005                  TRVNMA: CLR     R5                      ;CLEAR DIGIT COUNTER
 4341  024610  121427  000053                 CMPB    (R4),#'+                ;SEE IF THERE'S A + SIGN THERE
 4342  024614  001001                         BNE     10$                     ; BR IF NO
 4343  024616  000406                         BR      11$                     ; ELSE P$RADX ALREADY SAYS +, JUST BR
 4344  024620  121427  000055          10$:   CMPB    (R4),#'-                ;SEE IF THERE'S A - SIGN THERE
 4345  024624  001004                         BNE     1$                      ; BR IF NO
 4346  024626  112737  177777  003145         MOVB    #-1,P$RADX+1            ;SET 'MINUS FLAG' (HI BYTE OF P$RADX)
 4347  024634  005204                  11$:   INC     R4                      ;BUMP R4 TO POINT TO FIRST CHAR
 4348
 4349  024636  121427  000060          1$:    CMPB    (R4),#60                ;SEE IF CHAR. LESS THAN A '0'
 4350  024642  002434                         BLT     2$                      ;BR IF YES (NOT NUMERIC)
 4351  024644  121427  000067                 CMPB    (R4),#67                ;SEE IF CHAR. GREATER THAN A '7'
 4352  024650  003426                         BLE     13$                     ; BR IF YES
 4353  024652  123727  003144  000012         CMPB    P$RADX,#10.             ;SEE IF IN DECIMAL MODE
 4354  024660  001417                         BEQ     12$                     ; BR IF YES (CAN USE HIGHER LIMIT)
 4355  024662  121427  000071                 CMPB    (R4),#71                ;SEE IF DIGIT WAS A 8 OR 9
 4356  024666  003022                         BGT     2$                      ;BR IF NON-NUMERIC
 4357  024670                                 PRINTF  #CLIBRX                 ;ELSE WAS A 8 OR 9 WHEN IN OCTAL RADIX
 4358  024670  012746  011700                                                                 MOV     #CLIBRX,-(SP)
 4359  024674  012746  000001                                                                 MOV     #1,-(SP)
 4360  024700  010600                                                                         MOV     SP,R0
 4361  024702  104417                                                                         TRAP    C$PNTF
 4362  024704  062706  000004                                                                 ADD     #4,SP
 4363  024710  112737  177777  003147         MOVB    #-1,P$GDBD              ;SET ERROR RETURN FLAG
 4364  024716  000474                         BR      5$                      ; PRINT ERROR AND TAKE MISS
 4365
 4366  024720  121427  000071          12$:   CMPB    (R4),#71                ;SEE IF CHAR. GREATER THAN A '9'
 4367  024724  003003                         BGT     2$                      ;BR IF YES (NOT NUMERIC)
 4368  024726  005204                  13$:   INC     R4                      ;UPDATE CMD LINE PTR TO NEXT CHAR.
 4369  024730  005205                         INC     R5                      ;INDICATE A NUMERIC FOUND
 4370  024732  000741                         BR      1$                      ;GO LOOK AT NEXT CHAR.
 4371
 4372  024734  005705                  2$:    TST     R5                      ;SEE IF FOUND ANY NUMERICS
 4373  024736  001464                         BEQ     5$                      ;BR IF NO, TAKE 'MISS' BRANCH
 4374  024740  010401                         MOV     R4,R1                   ;GET POINTER TO START OF NUMERIC STRING
 4375  024742  160501                         SUB     R5,R1
 4376  024744  005037  003142                 CLR     P$NUM                   ;CLEAR LOC. WHERE VALUE WILL BE STORED
 4377  024750  112102                  3$:    MOVB    (R1)+,R2                ;GET ASCII CHAR AND CONVERT IT TO A #
 4378  024752  162702  000060                 SUB     #60,R2
 4379  024756  006337  003142                 ASL     P$NUM                   ;SHIFT CURRENT VALUE TO MAKE ROOM
 4380  024762  103437                         BCS     7$                      ;ERROR IF NUMBER TOO BIG
 4381  024764  013737  003142  003140         MOV     P$NUM,P$CNT             ;SAVE FOR LATER IN CASE DECIMAL RADIX
 4382  024772  006337  003142                 ASL     P$NUM
 4383  024776  103431                         BCS     7$                      ;ERROR IF NUMBER TOO BIG
 4384  025000  006337  003142                 ASL     P$NUM
 4385  025004  103426                         BCS     7$                      ;ERROR IF NUMBER TOO BIG
 4386  025006  123727  003144  000012         CMPB    P$RADX,#10.             ;SEE IF DECIMAL RADIX
 4387  025014  001004                         BNE     4$                      ;BR IF NOT EQUAL
```

```
4388  025016  063737  003140  003142          ADD     P$CNT,P$NUM
4389  025024  103416                          BCS     7$                      ;ERROR IF NUMBER TOO BIG
4390  025026  060237  003142          4$:     ADD     R2,P$NUM
4391  025032  103413                          BCS     7$                      ;ERROR IF NUMBER TOO BIG
4392  025034  005305                          DEC     R5
4393  025036  001344                          BNE     3$
4394  025040  105737  003145                  TSTB    P$RADX+1                ;SEE IF NUM WAS PRECEDED BY A - SIGN
4395  025044  001402                          BEQ     15$                     ; BR IF NO
4396  025046  005437  003142                  NEG     P$NUM                   ; ELSE NEGATE THE NUMBER BEFORE LEAVING
4397  025052  004737  024366          15$:    JSR     PC,TRVACT               ;SINCE NUMERIC FOUND, GO TAKE ACTION
4398  025056  000137  024416                  JMP     TRVNOB                  ;GO POINT R3 TO NEXT NODE
4399
4400  025062                          7$:     PRINTF  #CLINBG                 ;PRINT NUMBER TOO BIG ERROR
4401  025062  012746  011656                                                          MOV     #CLINBG,-(SP)
4402  025066  012746  000001                                                          MOV     #1,-(SP)
4403  025072  010600                                                                  MOV     SP,R0
4404  025074  104417                                                                  TRAP    C$PNTF
4405  025076  062706  000004                                                          ADD     #4,SP
4406  025102  112737  177777  003147          MOVB    #-1,P$GDBD              ;SET ERROR RETURN FLAG
4407  025110  000137  024406          5$:     JMP     TRVBRC                  ;TAKE "MISS" BRANCH
4408
4409
4410  025114  005005                  TRVALP: CLR     R5                      ;CLEAR ALPHA FOUND FLAG
4411  025116  121427  000101          1$:     CMPB    (R4),#101               ;SEE IF CHAR. LESS THAN A "A"
4412  025122  002406                          BLT     2$                      ;BR IF YES (NOT ALPHA)
4413  025124  121427  000132                  CMPB    (R4),#132               ;SEE IF CHAR. GREATER THAN A "Z"
4414  025130  003003                          BGT     2$                      ;BR IF YES (NOT ALPHA)
4415  025132  005204                          INC     R4                      ;UPDATE CMD LINE PTR TO NEXT CHAR
4416  025134  005205                          INC     R5                      ;INDICATE AN ALPHA WAS FOUND
4417  025136  000767                          BR      1$                      ;GO LOOK AT NEXT CHAR.
4418  025140  005705                  2$:     TST     R5                      ;SEE IF ANY ALPHA'S WERE FOUND
4419  025142  001404                          BEQ     3$                      ;BR IF NO
4420  025144  004737  024366                  JSR     PC,TRVACT               ;IF ANY FOUND TAKE ACTION
4421  025150  000137  024416                  JMP     TRVNOB                  ;THEN UPDATE R3 TO NEXT NODE -NO BRANCH
4422  025154  000137  024406          3$:     JMP     TRVBRC                  ;NONE FOUND, TAKE MISS BRANCH
4423
4424  025160  005005                  TRVALN: CLR     R5                      ;CLEAR ALPHANUM FOUND FLAG
4425  025162  121427  000060          10$:    CMPB    (R4),#60                ;SEE IF CHAR. LESS THAN A "0"
4426  025166  002417                          BLT     2$                      ;BR IF YES (NOT NUMERIC OR ALPHA)
4427  025170  121427  000072                  CMPB    (R4),#72                ;SEE IF CHAR. GREATER THAN A "9"
4428  025174  003003                          BGT     1$                      ;BR IF YES (NOT NUMERIC)
4429  025176  005204                          INC     R4                      ;UPDATE CMD LINE PTR TO NEXT CHAR.
4430  025200  005205                          INC     R5                      ;INDICATE A NUMERIC FOUND
4431  025202  000767                          BR      10$                     ;GO LOOK AT NEXT CHAR.
4432  025204  121427  000101          1$:     CMPB    (R4),#101               ;SEE IF CHAR. LESS THAN A "A"
4433  025210  002406                          BLT     2$                      ;BR IF YES (NOT ALPHA)
4434  025212  121427  000132                  CMPB    (R4),#132               ;SEE IF CHAR. GREATER THAN A "Z"
4435  025216  003003                          BGT     2$                      ;BR IF YES (NOT ALPHA)
4436  025220  005204                          INC     R4                      ;UPDATE CMD LINE PTR TO NEXT CHAR
4437  025222  005205                          INC     R5                      ;INDICATE AN ALPHA FOUND
4438  025224  000756                          BR      10$                     ;GO LOOK AT NEXT CHAR.
4439  025226  005705                  2$:     TST     R5                      ;SEE IF ANY ALPHANUM'S WERE FOUND
4440  025230  001404                          BEQ     3$                      ;BR IF NO
4441  025232  004737  024366                  JSR     PC,TRVACT               ;IF ANY FOUND TAKE ACTION
4442  025236  000137  024416                  JMP     TRVNOB                  ;THEN UPDATE R3 TO NEXT NODE -NO BRANCH
4443  025242  000137  024406          3$:     JMP     TRVBRC                  ;NONE FOUND, TAKE MISS BRANCH
```

```
 4444
 4445
 4446
 4447  025246  010401           TRVSTR: MOV     R4,R1           ;POINT R1 TO CMD STRING
 4448  025250  010305                   MOV     R3,R5
 4449  025252  062705  000006           ADD     #6,R5           ;POUNT R5 TO MATCH STRING FROM CLI NODE
 4450  025256  005037  003140           CLR     P$CNT           ;CLEAR CHAR MATCH COUNT
 4451  025262  105715           2$:     TSTB    (R5)            ;SEE IF END OF MATCH STRING YET
 4452  025264  001411                   BEQ     10$             ;BR IF YES
 4453  025266  105711                   TSTB    (R1)            ;SEE IF END OF CMD LINE YET
 4454  025270  001407                   BEQ     10$             ;BR IF YES
 4455  025272  121115                   CMPB    (R1),(R5)       ;SEE IF CHARACTERS MATCH
 4456  025274  001005                   BNE     10$             ;BR IF NO
 4457  025276  005237  003140           INC     P$CNT           ;MATCH -INCREMENT MATCH COUNT
 4458  025302  005201                   INC     R1              ;UPDATE STRING POINTERS
 4459  025304  005205                   INC     R5
 4460  025306  000765                   BR      2$              ;BR TO CONTINUE CHECKING CHARS.
 4461
 4462  025310  005737  003140  10$:     TST     P$CNT           ;WHEN DONE SEE IF ANY MATCHES FOUND
 4463  025314  001406                   BEQ     15$             ;BR IF NO, GO TAKE THE MISS BRANCH
 4464  025316  010104                   MOV     R1,R4           ;POINT CMD POINTER TO END OF STRING &
 4465  025320  004737  024366           JSR     PC,TRVACT       ;IF A MATCH FOUND, GO DO MATCH ACTION
 4466  025324  066303  000004           ADD     4(R3),R3        ;UPDATE R3 TO NEXT NODE (NO BRANCH)
 4467  025330  000207                   RTS     PC              ; (NO RETURN THRU TRVNOB SINCE DIFFERNT
 4468                                                           ;  DISPLACEMENT DUE TO MATCH STRING)
 4469  025332  000137  024406  15$:     JMP     TRVBRC          ; GO TAKE BRANCH
 4470
 4471                                                           ; (PARSED OK), -1 IF ILL CMD.....
 4472                           ;-----------------------------------------------------------------------
 4473
```

```
 4474                                   .SBTTL  REPORT CODING SECTION
 4475
 4476
 4477                                   ;++
 4478                                   ; THE REPORT CODING SECTION CONTAINS THE
 4479                                   ; "PRINTS" CALLS THAT GENERATE STATISTICAL REPORTS.
 4480                                   ;--
 4481
 4482  025336                                   BGNRPT
 4483  025336                                                                   L$RPT::
 4484
 4485
 4486  025336  004737  020612                   JSR     PC,REPORT              ;CALL SUBROUTINE TO DUMP EVENT LOG
 4487                                                                           ; AND BASE TABLE
 4488
 4489
 4490
 4491
 4492  025342                                   ENDRPT
 4493  025342                                                                   L10010:
 4494  025342  104425                                                                  TRAP    C$RPT
```

```
 4495                                   .SBTTL  PROTECTION TABLE
 4496
 4497                                   ;++
 4498                                   ; THIS TABLE IS USED BY THE RUNTIME SERVICES
 4499                                   ; TO PROTECT THE LOAD MEDIA.
 4500                                   ;--
 4501
 4502  025344                                   BGNPROT
 4503  025344                                                                  LSPROT::
 4504
 4505  025344  177777                          -1              ;OFFSET INTO P-TABLE FOR CSR ADDRESS
 4506  025346  177777                          -1              ;OFFSET INTO P-TABLE FOR MASSBUS ADDRESS
 4507  025350  177777                          -1              ;OFFSET INTO P-TABLE FOR DRIVE NUMBER
 4508
 4509  025352                                   ENDPROT
 4510
```

```
 4511                                   .SBTTL  INITIALIZE SECTION
 4512
 4513                                   ;++
 4514                                   ; THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
 4515                                   ; AT THE BEGINNING OF EACH PASS.
 4516                                   ;--
 4517
 4518  025352                                   BGNINIT
 4519  025352                                                                          L$INIT::
 4520
 4521  025352  005037  003010                   CLR     KEYWD1                  ;INIT COMMAND STORAGE VARIABLE
 4522  025356  005737  006564                   TST     DCLFLG                  ;'EXIT' COMMAND ?
 4523  025362  001403                           BEQ     INIT1                   ;NO,BRANCH
 4524  025364  005037  006564                   CLR     DCLFLG                  ;INIT 'DO CLEAN VARIABLE'
 4525  025370                                   DOCLN                           ;GO CLEANUP AND EXIT
 4526  025370  104444                                                                  TRAP    C$DCLN
 4527
 4528  025372  012737  177777  006566  INIT1:  MOV     #-1,RESFLG              ;SET RESTART FLAG
 4529  025400                                   READEF  #EF.START               ;IF HERE CAUSE OF START,DO SOME INIT
 4530  025400  012700  000040                                                          MOV     #EF.START,R0
 4531  025404  104447                                                                  TRAP    C$REFG
 4532  025406                                   BCOMPLETE       START
 4533  025406  103417                                                                  BCS     START
 4534  025410                                   READEF  #EF.RESTART             ;IF HERE CAUSE OF RESTART, DO SOME INIT
 4535  025410  012700  000037                                                          MOV     #EF.RESTART,R0
 4536  025414  104447                                                                  TRAP    C$REFG
 4537  025416                                   BCOMPLETE       RESTRT
 4538  025416  103513                                                                  BCS     RESTRT
 4539  025420                                   READEF  #EF.CONTINUE            ;SEE IF WE'RE HERE CAUSE OF A CONTINUE
 4540  025420  012700  000036                                                          MOV     #EF.CONTINUE,R0
 4541  025424  104447                                                                  TRAP    C$REFG
 4542  025426                                   BNCOMPLETE      S1              ;BR IF NOT HERE CAUSE OF CONITNUE
 4543  025426  103002                                                                  BCC     S1
 4544  025430  000137  026120                   JMP     ENDIT                   ;JMP IF HERE CAUSE OF A CONTINUE
 4545  025434                           S1:     READEF  #EF.NEW                 ;SEE IF THIS IS A 'NEW PASS"
 4546  025434  012700  000035                                                          MOV     #EF.NEW,R0
 4547  025440  104447                                                                  TRAP    C$REFG
 4548  025442                                   BCOMPLETE       NEW             ;IF YES, BR AROUND LOGUNIT # SETUP
 4549  025442  103521                                                                  BCS     NEW
 4550  025444  000523                           BR      GETPRM
 4551
 4552  025446  005037  006566          START:  CLR     RESFLG                  ;CLEAR RESTART FLAG SINCE HERE ON START
 4553  025452  005037  006626                   CLR     CLKVEC                  ;CLEAR CLK VECTOR PTR. AS A FLAG IN
 4554                                                                           ; NO CLOCK IS FOUND.
 4555  025456  012702  006622                   MOV     #CLKCSR,R2              ;SETUP R2 AS A PTR. TO CLOCK INFO BLOCK
 4556  025462                                   CLOCK   L,R1                    ;LOOK FOR A LINE CLOCK
 4557  025462  012700  000114                                                          MOV     #'L,R0
 4558  025466  104462                                                                  TRAP    C$CLCK
 4559  025470  010001                                                                  MOV     R0,R1
 4560  025472                                   BNCOMPLETE      S2              ; IF NONE THERE GO LOOK FOR A P-CLOCK
 4561  025472  103006                                                                  BCC     S2
 4562  025474  004737  017732                   JSR     PC,CLKSET               ; GO SET UP CLOCK INFO TABLE & CLK VEC.
 4563  025500  012737  000100  006632           MOV     #LCLKEN,CLKEN           ;SETUP THE ENABLE LINE CLOCK DATA
 4564  025506  000457                           BR      RESTRT
 4565
 4566  025510                           S2:     CLOCK   P,R1                    ;LOOK FOR A P-CLOCK SINCE NO LINE CLOCK
```

```
4567  025510  012700  000120                                                    MOV     #'P,R0
4568  025514  104462                                                            TRAP    C$CLCK
4569  025516  010001                                                            MOV     R0,R1
4570  025520                        BNCOMPLETE      S3              ; IF NONE THERE GO SEE IF THIS IS LSI
4571  025520  103017                                                            BCC     S3
4572  025522  004737  017732        JSR     PC,CLKSET               ; ELSE GO SET UP CLOCK INFO & VECTOR
4573  025526  062737  000002  006622  ADD     #2,CLKCSR               ;POINT CLKCSR TO P-CLK COUNT SET REG.
4574  025534  012777  001600  161060  MOV     #PCLKCT,@CLKCSR         ;LOAD CLK SET REG. WITH COUNT VALUE
4575  025542  162737  000002  006622  SUB     #2,CLKCSR               ;POINT CLKCSR BAC TO P-CLK CSR
4576  025550  012737  000111  006632  MOV     #PCLKEN,CLKEN           ;SETUP THE ENABLE THE P-CLK DATA
4577  025556  000433                  BR      RESTRT
4578
4579  025560                  S3:     READBUS                         ;READ BUS TYPE TO SEE IF ON AN LSI
4580  025560  104407                                                            TRAP    C$RDBU
4581  025562                        BNCOMPLETE      S4              ;BR IF NOT, NO CHANCE OF A CLOCK
4582  025562  103021                                                            BCC     S4
4583  025564  012737  000100  006626  MOV     #100,CLKVEC             ;LOAD 100 AS CLK VECTOR
4584  025572  005037  006624          CLR     CLKBR                   ;LOAD 0 AS CLK INT. LEVEL
4585  025576  012737  006632  006622  MOV     #CLKEN,CLKCSR           ;KLUDGE UP THE CSR & ENABLE DATA LOCS
4586  025604                        GMANID  L5060,CLKHZ,D,377,50.,60.,YES
4587  025604  104443                                                            TRAP    C$GMAN
4588  025606  000406                                                            BR      10000$
4589  025610  006630                                                            .WORD   CLKHZ
4590  025612  000052                                                            .WORD   T$CODE
4591  025614  014072                                                            .WORD   L5060
4592  025616  000377                                                            .WORD   377
4593  025620  000062                                                            .WORD   T$LOLIM
4594  025622  000074                                                            .WORD   T$HILIM
4595  025624                                                          10000$:
4596  025624  000410                  BR      RESTRT
4597
4598  025626                  S4:     PRINTF  #BDCLK                  ;INFORM OPR. NO CLOCK, & EXIT INIT
4599  025626  012746  014210                                                    MOV     #BDCLK,-(SP)
4600  025632  012746  000001                                                    MOV     #1,-(SP)
4601  025636  010600                                                            MOV     SP,R0
4602  025640  104417                                                            TRAP    C$PNTF
4603  025642  062706  000004                                                    ADD     #4,SP
4604
4605  025646  005037  006634  RESTRT: CLR     TIMMIN                  ;CLEAR TIME SINCE START LOCATIONS
4606  025652  005037  006636          CLR     TIMSEC
4607  025656  013737  006630  006640  MOV     CLKHZ,TIMTCK            ;LOAD TICKS/SEC
4608  025664  012702  006652          MOV     #EVTLOG,R2              ;INIT EVENT TABLE TO ALL 1'S AFTER EACH
4609  025670  010237  006650          MOV     R2,EVTPTR               ; START OR RES AND INIT TABLE POINTER
4610  025674  012722  177777  1$:     MOV     #-1,(R2)+
4611  025700  020227  007554          CMP     R2,#EVTEND              ;SEE IF REACHED END OF TABLE
4612  025704  001373                  BNE     1$                      ;LOOP UNTIL DONE
4613
4614  025706  012737  177777  006560  NEW:    MOV     #-1,LOGUNT              ;INITIALIZE LOGICAL UNIT #
4615
4616  025714  005237  006560  GETPRM: INC     LOGUNT                  ;POINT TO NEXT LOGICAL UNIT
4617  025720  023737  006560  002012  CMP     LOGUNT,L$UNIT           ;SEE IF PAST MAX. LOG. UNIT #
4618  025726  002367                  BGE     NEW                     ;BR IF YES, AND START OVER
4619
4620  025730                        GPHARD  LOGUNT,R1               ;GET THE P-TABLE FOR THIS LOG. UNIT
4621  025730  013700  006560                                                    MOV     LOGUNT,R0
4622  025734  104442                                                            TRAP    C$GPHRD
```

```
4623  025736  010001                          MOV     R0,R1
4624  025740                          BNCOMPLETE      GETPRM          ;IF NO P-TABLE AVAIL., GO GET NEXT ONE
4625  025740  103365                                                  BCC     GETPRM
4626
4627  025742  011137  006574          MOV     (R1),FHDPLX             ;PUT FULL OR HALF DUPLEX ANSWER IN LOC.
4628
4629
4630                                  ;DEVICE DEPENDENT PART OF GETTING INFO FROM P-TABLE
4631
4632  025746  016137  000002  011450  MOV     2(R1),RXCSR             ;STORE AWAY CSR ADDRESSES
4633
4634
4635  025754  016137  000002  011452  MOV     2(R1),PARCSR
4636  025762  062737  000002  011452  ADD     #2,PARCSR
4637  025770  016137  000002  011454  MOV     2(R1),RXDBUF
4638  025776  062737  000002  011454  ADD     #2,RXDBUF
4639  026004  016137  000002  011456  MOV     2(R1),TXCSR
4640  026012  062737  000004  011456  ADD     #4,TXCSR
4641  026020  016137  000002  011460  MOV     2(R1),TXDBUF
4642  026026  062737  000006  011460  ADD     #6,TXDBUF
4643
4644  026034  016137  000004  011462  MOV     4(R1),INVEC             ;STORE AWAY INPUT INTERRUPT VECTOR
4645  026042  016137  000004  011464  MOV     4(R1),OUTVEC
4646  026050  062737  000004  011464  ADD     #4,OUTVEC               ;BUILD OUTPUT INTERRUPT VECTOR
4647  026056  016137  000006  011466  MOV     6(R1),INTPRI            ;STORE AWAY INTERRUPT PRIORITY
4648  026064  016137  000014  011522  MOV     14(R1),RNODE            ;STORE AWAY THE REMOTE NODE TYPE
4649  026072  016137  000010  037132  MOV     10(R1),MPPTP            ;MULTI-POINT =1
4650  026100  001004                  BNE     10$                     ;IF MULTI-POINT GET ADDRESS FROM PTABLE
4651  026102  112737  000001  037065  MOVB    #1,TRIBN                ;IF POINT-POINT ADDRESS ALWAYS =1
4652  026110  000403                  BR      ENDIT                   ;EXIT
4653  026112  116137  000012  037065  10$:    MOVB    12(R1),TRIBN            ;STORE AWAY TRIB ADDRESS
4654
4655  026120                          ENDIT:
4656  026120                          SETVEC  CLKVEC,#CLKINT,#340     ;SETUP CLOCK VECTOR
4657  026120  012746  000340                                                  MOV     #340,-(SP)
4658  026124  012746  017756                                                  MOV     #CLKINT,-(SP)
4659  026130  013746  006626                                                  MOV     CLKVEC,-(SP)
4660  026134  012746  000003                                                  MOV     #3,-(SP)
4661  026140  104437                                                          TRAP    C$SVEC
4662  026142  062706  000010                                                  ADD     #10,SP
4663
4664                                  ;DEVICE DEPENDENT VECTOR SETUP
4665
4666  026146                          SETVEC  INVEC,#DVRXI,#PRIO5     ;SETUP INPUT INTERRUPT VECTOR
4667  026146  012746  000240                                                  MOV     #PRIO5,-(SP)
4668  026152  012746  035556                                                  MOV     #DVRXI,-(SP)
4669  026156  013746  011462                                                  MOV     INVEC,-(SP)
4670  026162  012746  000003                                                  MOV     #3,-(SP)
4671  026166  104437                                                          TRAP    C$SVEC
4672  026170  062706  000010                                                  ADD     #10,SP
4673  026174                          SETVEC  OUTVEC,#DVTXI,#PRIO5    ;SETUP OUTPUT INTERRUPT VECTOR
4674  026174  012746  000240                                                  MOV     #PRIO5,-(SP)
4675  026200  012746  036230                                                  MOV     #DVTXI,-(SP)
4676  026204  013746  011464                                                  MOV     OUTVEC,-(SP)
4677  026210  012746  000003                                                  MOV     #3,-(SP)
4678  026214  104437                                                          TRAP    C$SVEC
```

```
4679 026216 062706 000010                                          ADD     #10,SP
4680
4681 026222                 SETPRI  #PRI00         ;SET THE 'RUN' PRIORITY TO 0
4682 026222 012700 000000                                          MOV     #PRI00,R0
4683 026226 104441                                                 TRAP    C$SPRI
4684 026230                 EXIT    INIT
4685 026230 104432                                                 TRAP    C$EXIT
4686 026232 000002                                                 .WORD   L10012-.
4687
4688
4689                        .EVEN
4690
4691 026234                 ENDINIT
4692 026234                                              L10012:
4693 026234 104411                                                 TRAP    C$INIT
```

```
                                .SBTTL  AUTODROP SECTION

                                ;++
                                ; THIS CODE IS EXECUTED IMMEDIATELY AFTER THE INITIALIZE CODE IF
                                ; THE "ADR" FLAG WAS SET.  THE UNIT(S) UNDER TEST ARE CHECKED TO
                                ; SEE IF THEY WILL RESPOND.  THOSE THAT DON'T ARE IMMEDIATELY
                                ; DROPPED FROM TESTING.
                                ;--

                                        BGNAUTO
                                                                        L$AUTO::

                                        ENDAUTO
                                                                        L10013:
                                                                                TRAP    C$AUTO
```

```
                                .SBTTL  CLEANUP CODING SECTION

                                ;++
                                ; THE CLEANUP CODING SECTION CONTAINS THE CODING THAT IS PERFORMED
                                ; AFTER THE HARDWARE TESTS HAVE BEEN PERFORMED.
                                ;--

                                        BGNCLN
                                                                                L$CLEAN::
                                        CLR     @CLKCSR         ;DISABLE CLOCK
                                        SETPRI  #PRI07          ;SET PROCESSOR PRIORITY BACK TO 7
                                                                                MOV     #PRI07,R0
                                                                                TRAP    C$SPRI
                                        CMP     #EXIT,KEYWD1    ;'EXIT' COMMAND ?
                                        BEQ     EXITCLN         ;YES,BRANCH

                                ;;LOG ^C ABORT IN EVENT LOG
                                        MOV     #ABO,TEMP       ;EVENT TYPE
                                        MOV     OPVAR,TEMP4     ;START TIME-OUTS
                                        MOV     PSCNT,TEMP2     ;PASSES
                                        MOV     ERRCNT,TEMP3    ;ERRORS
                                        JSR     PC,LOGS5        ;GO LOG IT
                                EXITCLN:BRESET                  ;CLEAR ALL BEFORE END
                                                                                TRAP    C$RESET

                                        EXIT    CLN
                                                                                TRAP    C$EXIT
                                                                                .WORD   L10014-.

                                .EVEN

                                ENDCLN
                                                                        L10014:
                                                                                TRAP    C$CLEAN
```

```
 4746                                   .SBTTL  DROP UNIT SECTION
 4747
 4748                                   ;++
 4749                                   ; THE DROP-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
 4750                                   ; TO NO LONGER BE TESTED.
 4751                                   ;--
 4752
 4753  026326                                   BGNDU
 4754  026326                                                                  L$DU::
 4755
 4756
 4757  026326                                   EXIT    DU
 4758  026326  000167                                                                 .WORD   J$JMP
 4759  026330  000000                                                                 .WORD   L10015-2-.
 4760
 4761
 4762                                   .EVEN
 4763
 4764  026332                                   ENDDU
 4765  026332                                                                  L10015:
 4766  026332  104453                                                                 TRAP    C$DU
```

```
 4767                                   .SBTTL  ADD UNIT SECTION
 4768
 4769                                   ;++
 4770                                   ; THE ADD-UNIT SECTION CONTAINS ANY CODE THE PROGRAMMER WISHES
 4771                                   ;  TO BE EXECUTED IN CONJUNCTION WITH THE ADDING OF A UNIT BACK
 4772                                   ;  TO THE TEST CYCLE.
 4773                                   ;--
 4774
 4775  026334                           BGNAU
 4776  026334                                                                 L$AU::
 4777
 4778
 4779  026334                           EXIT    AU
 4780  026334  000167                                                                 .WORD   J$JMP
 4781  026336  000000                                                                 .WORD   L10016-2-.
 4782
 4783
 4784                                   .EVEN
 4785
 4786  026340                           ENDAU
 4787  026340                                                                 L10016:
 4788  026340  104452                                                                TRAP    C$AU
 4789
 4790
```

```
                                .SBTTL  TEST 1:  SETUP AND MODES OF OPERATION


                                ;++
                                ; TEST TO DETECT FAULTS IN THE DATA COMMUNICATION LINK.  THIS TEST WILL
                                ; THE PROVIDE COVERAGE NECESSARY TO ISOLATE FAILURES TO THE COMPUTER
                                ; EQUIPMENT, THE COMMUNICATION LINK, OR THE MODEM.
                                ;--



026342                                  BGNTST
026342                                                                  T1::


                                .SBTTL          PROGRAM SETUP SECTION

026342  013777  006632  160252          MOV     CLKEN,@CLKCSR   ;ENABLE THE CLOCK

026350                          GTXRXB:
026350  005001                  GTRA2:  CLR     R1
026352  012737  000001  006642          MOV     #1,TIMER1       ;SET TIMER TO COUNT 1 TICK
026360  005737  006642          1$:     TST     TIMER1          ;CHECK FOR IT TO BE COUNTED OFF
026364  001412                          BEQ     GTRA3           ;BRANCH IF CLOCK EXISTS (COUNTED A TICK)
026366  005301                          DEC     R1
026370  001373                          BNE     1$              ;KEEP CHECKING UNTIL R1 DOES FULL COUNTDWN
026372                                  PRINTF  #NOCLK          ;PRINT BAD CLK MSG AND WARN OF HANG IF TIMEOUT
026372  012746  014234                                                  MOV     #NOCLK,-(SP)
026376  012746  000001                                                  MOV     #1,-(SP)
026402  010600                                                          MOV     SP,R0
026404  104417                                                          TRAP    C$PNTF
026406  062706  000004                                                  ADD     #4,SP

026412  005737  006566          GTRA3:  TST     RESFLG          ;SEE IF HERE AFTER A RESTART.
026416  001112                          BNE     GTRA5           ;BR IF HERE CAUSE OF A RESTART

                                ; CLEAR COUNTS AND SET UP DEFAULTS

026420  005037  006530          GTRA4:  CLR     TOTCC           ;CLEAR TOTAL CHAR. COUNT TEMP. LOC.
026424  005037  006464                  CLR     TTOTCC          ; CLEAR TOTAL CHAR. COUNT FOR TX BUFF
026430  005037  006450                  CLR     CTOTCC          ; CLEAR TOTAL CHAR. COUNT FOR CMP BUFF
026434  012701  006150                  MOV     #PTRTAB,R1      ;INIT TRANSMIT MESSAGE POINTER
026440  010137  006442                  MOV     R1,TXPTR
026444  005037  006440                  CLR     RXPTR           ; ZERO RX POINTER

026450  012737  006244  006444          MOV     #PTR13,CMPPTR   ;INIT COMPARE MESSAGE POINTER

026456  012737  000005  006516          MOV     #5,MSGTYP       ;SET UP DEFAULT MSG TYPE (QUICK FOX - ITEP MSG)
026464  013737  002162  006520          MOV     MSGSC,CURCC     ;SET UP DEFAULT CHAR COUNT
026472  012737  003150  006466          MOV     #TXBUF,TCURAD   ;SET UP CURRENT ADD TO START OF TX BUFFER
026500  012737  005150  006452          MOV     #CMPBUF,CCURAD  ;SET UP CURRENT ADD TO START OF CMP BUFFER

026506  013737  006466  006526          MOV     TCURAD,CURADD   ;SETUP CURRENT ADDR TO START OF TXBUF
026514  013737  006442  006524          MOV     TXPTR,CPTR      ;SETUP CURRENT POINTER TABLE POINTER FOR TXBUF
026522  004737  023364                  JSR     PC,BLDBUF       ; GO BUILD POINTER TABLE AND BUFFER
026526  012737  000001  006462          MOV     #1,TXMTOT       ;BUMP TOTAL MESSAGE COUNT
```

```
 4847
 4848  026534  013737  006444  006524          MOV     CMPPTR,CPTR     ;SET UP START OF COMPARE POINTER TABLE
 4849  026542  013737  006452  006526          MOV     CCURAD,CURADD   ;SET UP CURRENT ADDR. TO START OF CMPBUF
 4850  026550  012737  000005  006516          MOV     #5,MSGTYP
 4851  026556  013737  002162  006520          MOV     MSG5C,CURCC
 4852  026564  004737  023364                  JSR     PC,BLDBUF       ;PUT DEFAULT MESSAGE INTO CMPBUF
 4853  026570  012737  000001  006446          MOV     #1,CMPTOT       ;BUMP THE COMP MESG COUNT
 4854  026576  012737  000003  006570          MOV     #ACT,MODTYP     ;SET DEFAULT MODE= ACTIVE
 4855  026604  005037  006572                  CLR     MLTYP           ;SET DEFAULT MAINTENANCE LOOP MOVE =NONE
 4856  026610  012737  000001  006600          MOV     #1,RPASS        ;SET UP DEFAULT 'RUN PASS" COUNT TO 1
 4857  026616  012737  000002  006576          MOV     #2,PARAM        ;SET UP PROG. PARAMETERS - DATACHECKING ENABLED
 4858                                                                  ;                  OPERATOR STATUS MSGS. PRINT OFF
 4859  026624                                  PRINTF  #HLP0
 4860  026624  012746  012213                                                          MOV     #HLP0,-(SP)
 4861  026630  012746  000001                                                          MOV     #1,-(SP)
 4862  026634  010600                                                                  MOV     SP,R0
 4863  026636  104417                                                                  TRAP    C$PNTF
 4864  026640  062706  000004                                                          ADD     #4,SP
 4865  026644                          GTRA5:  SETVEC  INVEC,#DVRXI,#PRIO5  ;DEFAULT NON-PROTOCOL RX INTERRUPT ROUTINE
 4866  026644  012746  000240                                                          MOV     #PRIO5,-(SP)
 4867  026650  012746  035556                                                          MOV     #DVRXI,-(SP)
 4868  026654  013746  011462                                                          MOV     INVEC,-(SP)
 4869  026660  012746  000003                                                          MOV     #3,-(SP)
 4870  026664  104437                                                                  TRAP    C$SVEC
 4871  026666  062706  000010                                                          ADD     #10,SP
 4872  026672  042737  000300  006576          BIC     #PRORUN!ABORT,PARAM     ;INIT PROTOCOL VARIABLES
 4873  026700  013737  006570  007704          MOV     MODTYP,DEV1
 4874  026706  013737  006572  007706          MOV     MLTYP,DEV2
 4875  026714  013737  006600  007710          MOV     RPASS,DEV3
 4876  026722  013737  006576  007712          MOV     PARAM,DEV4
 4877  026730  004737  023714                  JSR     PC,SHWOP        ;PRINT TO OPERATOR THE CURRENT MODE......
 4878
 4879  026734                                  MANUAL                  ;SEE IF MANUAL INTERVENTION ALLOWED
 4880  026734  104450                                                                  TRAP    C$MANI
 4881  026736                                  BCOMPLETE       GETCL   ;  BR IF YES (UAM=0 AND NOT CHAINED)
 4882  026736  103412                                                                  BCS     GETCL
 4883  026740  005737  006600                  TST     RPASS           ;SEE IF THIS IS FIRST 'DCLT PASS"
 4884  026744  001002                          BNE     1$              ; BR IF NOT COMPLETED 1 PASS
 4885  026746                                  EXIT    TST             ; IF DONE 1 PASS IN UNATTENDED MODE - EXIT
 4886  026746  104432                                                                  TRAP    C$EXIT
 4887  026750  017254                                                                  .WORD   L10017-.
 4888  026752  012737  000001  006572  1$:     MOV     #TTL,MLTYP      ;SET UP DEFAULT FOR UNATTENDED MODE
 4889  026760  000137  031736                  JMP     GTR9            ;  'R M=ACT/LC-1/PAS=1/NOST/CH" AND RUN
 4890
 4891                                  .SBTTL          COMMAND LINE FETCH & INTERPRETATION SECTION
 4892
 4893  026764  105037  003147          GETCL:  CLRB    P$GDBD          ;CLEAR CMD LINE PARSING ERROR FLAGS
 4894  026770  105037  003146                  CLRB    P$NNUF
 4895  026774                                  GMANID  CLI$PM,CMDBUF,A,-1,1,72.,NO     ;GET A COMMAND LINE FROM OPR.
 4896  026774  104443                                                                  TRAP    C$GMAN
 4897  026776  000406                                                                  BR      10000$
 4898  027000  002666                                                                  .WORD   CMDBUF
 4899  027002  000142                                                                  .WORD   T$CODE
 4900  027004  011570                                                                  .WORD   CLI$PM
 4901  027006  177777                                                                  .WORD   -1
 4902  027010  000001                                                                  .WORD   T$LOLIM
```

```
 4903  027012  000110                                                                  .WORD   T$HILIM
 4904  027014                                                                      10000$:
 4905  027014  012737  002666  003132          MOV     #CMDBUF,P$BUFA
 4906  027022  012737  007714  003134          MOV     #CLITRE,P$TREE
 4907  027030  012737  027740  003136          MOV     #CLIACT,P$ACT
 4908  027036  005037  003012                  CLR     QUALFG                  ;CLEAR QUALIFIER FLAG LOCATION
 4909  027042  004737  024246                  JSR     PC,P$TRV                ;GO PARSE COMMAND LINE
 4910  027046  105737  003147                  TSTB    P$GDBD                  ;SEE IF PARSED OK OR AN ERROR
 4911  027052  001412                          BEQ     1$
 4912  027054                                  PRINTF  #CLIERM
 4913  027054  012746  011603                                                  MOV     #CLIERM,-(SP)
 4914  027060  012746  000001                                                  MOV     #1,-(SP)
 4915  027064  010600                                                          MOV     SP,R0
 4916  027066  104417                                                          TRAP    C$PNTF
 4917  027070  062706  000004                                                  ADD     #4,SP
 4918  027074  000137  026764                  JMP     GETCL
 4919  027100  105737  003146          1$:     TSTB    P$NNUF                  ;SEE IF INCOMPLETE COMMAND TYPED
 4920  027104  001412                          BEQ     10$
 4921  027106                                  PRINTF  #CLINUF
 4922  027106  012746  011633                                                  MOV     #CLINUF,-(SP)
 4923  027112  012746  000001                                                  MOV     #1,-(SP)
 4924  027116  010600                                                          MOV     SP,R0
 4925  027120  104417                                                          TRAP    C$PNTF
 4926  027122  062706  000004                                                  ADD     #4,SP
 4927  027126  000137  026764                  JMP     GETCL
 4928
 4929  027132  023727  003010  000060  10$:     CMP     KEYWD1,#SETET           ;WAS'SET EXPECT=TRANSMIT'' TYPED ?
 4930  027140  001711                          BEQ     GETCL                   ;YES,BRANCH
 4931  027142  023727  003010  000005          CMP     KEYWD1,#HLP             ;SEE IF HELP WAS TYPED
 4932  027150  001705                          BEQ     GETCL                   ;GO GET CMD AGAIN IF YES
 4933  027152  023727  003010  000055          CMP     KEYWD1,#PRNT            ;SEE IF PRINT WAS TYPED
 4934  027160  001701                          BEQ     GETCL                   ; GO GET CMD AGAIN IF YES
 4935  027162  023727  003010  000004          CMP     KEYWD1,#RUN             ;SEE IF RUN WAS TYPED
 4936  027170  001002                          BNE     11$                     ; BR IF NO
 4937  027172  000137  031736                  JMP     GTR9                    ; START EXEC. IF YES
 4938  027176  023727  003010  000052  11$:     CMP     KEYWD1,#DMPS            ;SEE IF DUMP WAS TYPED
 4939  027204  001004                          BNE     12$                     ; BR IF NO
 4940  027206  004737  023130                  JSR     PC,DUMPSR               ; ELSE, DUMP PART OF MEMORY
 4941  027212  000137  026764                  JMP     GETCL                   ; THEN RETURN TO GET ANOTHER CMD.
 4942  027216  023727  003010  000057  12$:     CMP     KEYWD1,#EXIT            ;EXIT ?
 4943  027224  001005                          BNE     13$                     ;NO,BRANCH
 4944  027226  012737  000001  006564          MOV     #1,DCLFLG               ;SET CLEANUP FLAG
 4945  027234                                  EXIT    TST                     ;GO BACK TO INIT
 4946  027234  104432                                                                  TRAP    C$EXIT
 4947  027236  016766                                                                  .WORD   L10017-.
 4948
 4949  027240  023727  003010  000001  13$:     CMP     KEYWD1,#CLEAR           ;SEE IF CLEAR WAS TYPED
 4950  027246  001646                          BEQ     GETCL                   ; IF YES, BACK TO GET ANOTHER CMD.
 4951  027250  023727  003010  000002          CMP     KEYWD1,#SHOW            ;SEE IF SHOW WAS TYPED
 4952  027256  001642                          BEQ     GETCL                   ; IF YES, BACK TO GET ANOTHER CMD.
 4953  027260  023727  003010  000010  4$:     CMP     KEYWD1,#SETEXP          ;SEE IF SET EXPECTED
 4954  027266  001512                          BEQ     2$                      ; BR IF YES (A SETEXP WAS TYPED)
 4955  027270  013737  006464  006530  5$:     MOV     TTOTCC,TOTCC
 4956  027276  023727  006530  001000          CMP     TOTCC,#BUFLIM           ;SEE IF BUFFER ALREADY FULL
 4957  027304  002414                          BLT     15$                     ; BR IF NOT FULL (BUFLIM # OF CHARS.)
 4958  027306                                  PRINTF  #MSGTRN,#BUFEX          ; ELSE TELL OPR. AND DON'T BUILD MSG.
```

```
 4959  027306  012746  014355                                                  MOV     #BUFEX,-(SP)
 4960  027312  012746  014373                                                  MOV     #MSGTRN,-(SP)
 4961  027316  012746  000002                                                  MOV     #2,-(SP)
 4962  027322  010600                                                          MOV     SP,R0
 4963  027324  104417                                                          TRAP    C$PNTF
 4964  027326  062706  000006                                                  ADD     #6,SP
 4965  027332  000137  026764                JMP     GETCL                   ; THEN GO GET A NEW COMMAND
 4966  027336  005737  006464          15$:  TST     TTOTCC                  ;IF FIRST "SET" THEN GET RID OF DEFAULT
 4967  027342  001002                        BNE     6$
 4968  027344  005037  006462                CLR     TXMTOT
 4969  027350  012737  006150  006442  6$:   MOV     #PTRTAB,TXPTR           ;GET POSITION OF END OF TX LIST
 4970  027356  013701  006462                MOV     TXMTOT,R1
 4971  027362  020127  000017                CMP     R1,#MSGLIM              ;SEE IF MSG COUNT EXCEEDED.
 4972  027366  002414                        BLT     17$                     ; BR IF NO
 4973  027370                                PRINTF  #MSGTRN,#TABEX          ; ELSE TELL OPR. AND DON'T BUILD MSG.
 4974  027370  012746  014315                                                  MOV     #TABEX,-(SP)
 4975  027374  012746  014373                                                  MOV     #MSGTRN,-(SP)
 4976  027400  012746  000002                                                  MOV     #2,-(SP)
 4977  027404  010600                                                          MOV     SP,R0
 4978  027406  104417                                                          TRAP    C$PNTF
 4979  027410  062706  000006                                                  ADD     #6,SP
 4980  027414  000137  026764                JMP     GETCL                   ; THEN GO GET A NEW COMMAND.
 4981  027420  006301                  17$:  ASL     R1                      ;# OF MSGS *4 = NEXT FREE PTR BLOCK
 4982  027422  006301                        ASL     R1
 4983  027424  060137  006442                ADD     R1,TXPTR
 4984  027430  013737  006442  006524        MOV     TXPTR,CPTR              ;SETUP CHAR. COUNT, CURRENT ADDR, & PTR
 4985  027436  013737  006466  006526        MOV     TCURAD,CURADD
 4986  027444  004737  023266                JSR     PC,ADDCC                ;ADD IN CHAR. COUNT AND CHECK TOTAL
 4987  027450  004737  023364                JSR     PC,BLDBUF               ;GO BUILD MESSAGE IN BUFFER AND PTRS.
 4988  027454  013737  006524  006442        MOV     CPTR,TXPTR
 4989  027462  013737  006530  006464        MOV     TOTCC,TTOTCC            ;UPDATE CHAR. COUNT, CURR ADDR, & PTR
 4990  027470  013737  006526  006466        MOV     CURADD,TCURAD
 4991  027476  005237  006462                INC     TXMTOT
 4992  027502  005337  003014                DEC     QUALVL                  ;DEC THE COPY COUNT
 4993  027506  001270                        BNE     5$
 4994  027510  000137  026764                JMP     GETCL
 4995
 4996  027514  013737  006450  006530  2$:   MOV     CTOTCC,TOTCC            ;SETUP CHAR. COUNT, CURR. ADDR. & PTR
 4997  027522  023727  006530  001000        CMP     TOTCC,#BUFLIM           ;SEE IF BUFFER ALREADY FULL
 4998  027530  002414                        BLT     16$                     ; BR IF NOT FULL (BUFLIM # OF CHARS.)
 4999  027532                                PRINTF  #MSGTRN,#BUFEX          ; ELSE TELL OPR. AND DON'T BUILD MSG.
 5000  027532  012746  014355                                                  MOV     #BUFEX,-(SP)
 5001  027536  012746  014373                                                  MOV     #MSGTRN,-(SP)
 5002  027542  012746  000002                                                  MOV     #2,-(SP)
 5003  027546  010600                                                          MOV     SP,R0
 5004  027550  104417                                                          TRAP    C$PNTF
 5005  027552  062706  000006                                                  ADD     #6,SP
 5006  027556  000137  026764                JMP     GETCL                   ; THEN GO GET A NEW COMMAND
 5007  027562  005737  006450          16$:  TST     CTOTCC                  ;IF FIRST "SET" THEN GET RID OF DEFAULT
 5008  027566  001002                        BNE     7$
 5009  027570  005037  006446                CLR     CMPTOT
 5010  027574                          7$:
 5011  027574  012737  006244  006444        MOV     #PTR13,CMPPTR           ;INIT COMPARE MESSAGE POINTER
 5012  027602  013701  006446                MOV     CMPTOT,R1
 5013  027606  020127  000017                CMP     R1,#MSGLIM              ;SEE IF MSG COUNT EXCEEDED.
 5014  027612  002414                        BLT     18$                     ; BR IF NO
```

```
5015  027614                                    PRINTF  #MSGTRN,#TABEX          ; ELSE TELL OPR. AND DON'T BUILD MSG.
5016  027614  012746  014315                                                        MOV     #TABEX,-(SP)
5017  027620  012746  014373                                                        MOV     #MSGTRN,-(SP)
5018  027624  012746  000002                                                        MOV     #2,-(SP)
5019  027630  010600                                                              MOV     SP,R0
5020  027632  104417                                                              TRAP    C$PNTF
5021  027634  062706  000006                                                      ADD     #6,SP
5022  027640  000137  026764                      JMP     GETCL                   ; THEN GO GET A NEW COMMAND.
5023  027644  006301                        18$:   ASL     R1                      ;# OF MSGS *4 = NEXT FREE PTR BLOCK
5024  027646  006301                               ASL     R1
5025  027650  060137  006444                      ADD     R1,CMPPTR
5026  027654  013737  006444  006524              MOV     CMPPTR,CPTR
5027  027662  013737  006452  006526              MOV     CCURAD,CURADD
5028  027670  004737  023266                      JSR     PC,ADDCC                ;ADD IN XHAR. COUNT AND CHECK TOTAL
5029  027674  004737  023364                      JSR     PC,BLDBUF
5030  027700  013737  006524  006444              MOV     CPTR,CMPPTR
5031  027706  005237  006446                      INC     CMPTOT
5032  027712  013737  006526  006452              MOV     CURADD,CCURAD           ;UPDATE CHAR. COUNT, CURR ADDRR. & PTR
5033  027720  013737  006530  006450              MOV     TOTCC,CTOTCC
5034  027726  005337  003014                      DEC     QUALVL                  ;IF COPY WAS GIVEN, PUT MSG IN BUFF
5035  027732  001270                              BNE     2$                      ; AGAIN
5036  027734  000137  026764                      JMP     GETCL                   ;GO BACK UNTIL GET A 'RUN''
5037
5038
5039
5040
5041
```

```
5042
5043                                    .SBTTL          ACTION TABLE AND ROUTINES
5044                                    ;       USER MUST CLEAR/SET P$GDBD IF USE "CLIBIF" IN CONNECTION WITH ACTION
5045                                    ;       R2 WILL HOLD ACTION CODE FROM PARSING (CLI) NODE
5046  027740                            CLIACT:
5047  027740  006302                            ASL     R2              ;MULTIPLY ACTION CODE BY 2
5048  027742  016202  027756                    MOV     10$(R2),R2      ;OFFSET VALUE
5049  027746  062702  027756                    ADD     #10$,R2         ;ADD BASE VALUE
5050  027752  004712                            JSR     PC,(R2)         ;GO DO ACTION
5051  027754  000207                            RTS     PC              ;RETURN TO TRVACT:
5052
5053                                                                    ;BRIEF DESCRIPTION OF ACTONS TAKEN
5054  027756  000150                    10$:    .WORD   ACTNUL-10$      ;NULL
5055  027760  000152                            .WORD   ACTCLR-10$      ;CLEAR
5056  027762  000162                            .WORD   ACTSHO-10$      ;SHOW
5057  027764  001550                            .WORD   ACTCHK-10$      ;CHECK
5058  027766  000262                            .WORD   ACTRUN-10$      ;RUN
5059  027770  000172                            .WORD   ACTHLP-10$      ;HELP
5060  027772  000306                            .WORD   ACTCSE-10$      ;CLEAR OR SHOW EXPECT
5061  027774  000400                            .WORD   ACTCST-10$      ;CLEAR OR SHOW TRANSMIT
5062  027776  000722                            .WORD   ACTSTE-10$      ;SET EXPECT
5063  030000  000732                            .WORD   ACTSTT-10$      ;SET TRANSMIT
5064  030002  000750                            .WORD   ACTSZE-10$      ;SIZE
5065  030004  000760                            .WORD   ACTCOP-10$      ;COPY
5066  030006  000770                            .WORD   ACTNUM-10$      ;NUMERIC VALUE FOR SIZE OR COPY
5067  030010  001062                            .WORD   ACTQPM-10$      ;QUOTED MESSAGE FROM USER
5068  030012  001556                            .WORD   ACTSTS-10$      ;STATUS
5069  030014  001102                            .WORD   ACTEQQ-10$      ;END OF QUOTED MESSAGE FROM USER
5070  030016  001162                            .WORD   ACTMS0-10$      ;ONES AS DATA
5071  030020  001170                            .WORD   ACTMS1-10$      ;ZEROS AS DATA
5072  030022  001200                            .WORD   ACTMS2-10$      ;1ALT AS DATA
5073  030024  001210                            .WORD   ACTMS3-10$      ;0ACT AS DATA
5074  030026  001220                            .WORD   ACTMS4-10$      ;ITEP AS DATA
5075  030030  001230                            .WORD   ACTMS5-10$      ;CCITT AS DATA
5076  030032  001246                            .WORD   ACTMS6-10$      ;ALPHA AS DATA
5077  030034  001334                            .WORD   ACTATV-10$      ;ACTIVE MODE
5078  030036  001344                            .WORD   ACTPAS-10$      ;PASSIVE MODE
5079  030040  001364                            .WORD   ACTREC-10$      ;RECEIVE MODE
5080  030042  001372                            .WORD   ACTLIS-10$      ;LISTEN MODE
5081  030044  001402                            .WORD   ACTDLL-10$      ;DOWNLINE LOAD
5082  030046  001412                            .WORD   ACTTRA-10$      ;TRANSMIT MODE
5083  030050  001422                            .WORD   ACTTAL-10$      ;TALK MODE
5084  030052  001450                            .WORD   ACTNO-10$       ;NO    IE /NOCHECK
5085  030054  001460                            .WORD   ACTECH-10$      ;ECHO
5086  030056  001564                            .WORD   ACTCRC-10$      ;CRC
5087  030060  001600                            .WORD   ACTPRO-10$      ;PROTOCOL
5088  030062  001632                            .WORD   ACTRPS-10$      ;STATUS
5089  030064  001642                            .WORD   ACTMOP-10$      ;SATELLITE IN MAINTENANCE LOOP MODE
5090  030066  001652                            .WORD   ACTTLP-10$      ;INTERNALTTL
5091  030070  001662                            .WORD   ACTCLP-10$      ;CABLE LOOP
5092  030072  001672                            .WORD   ACTLLP-10$      ;LOCAL MODEM LOOP
5093  030074  001702                            .WORD   ACTRLP-10$      ;REMOTE MODEM LOOP
5094  030076  000142                            .WORD   ACTNUF-10$      ;MORE COMMAND NEEDED
5095  030100  001140                            .WORD   ACTBCR-10$      ;BAD CHARACTER IN OPERATOR MESSAGE
5096  030102  000656                            .WORD   ACTDMS-10$      ;DUMP MEMORY START ADDRESS
5097  030104  000706                            .WORD   ACTDME-10$      ;DUMP MEMORY END ADDRESS
```

```
 5098  030106  000700                    .WORD   ACTDMQ-10$      ;DUMP WORD
 5099  030110  000246                    .WORD   ACTPRT-10$      ;PRINT
 5100  030112  001572                    .WORD   ACTMOS-10$      ;MODEM STATUS
 5101  030114  000236                    .WORD   ACTEXT-10$      ;EXIT ROUTINE
 5102  030116  001272                    .WORD   ACTSEX-10$      ;SET EX=TR
 5103
```

```
 5104
 5105  030120  112737  177777  003146  ACTNUF: MOVB    #-1,P$NNUF      ;SET FLAG TO SAY NEED MORE OF COMMAND
 5106  030126  000207                  ACTNUL: RTS     PC              ;RETURN TO PARSER
 5107
 5108  030130  012737  000001  003010  ACTCLR: MOV     #CLEAR,KEYWD1   ;SET LOC TO SAY A CLEAR WAS TYPED
 5109  030136  000207                          RTS     PC
 5110
 5111  030140  012737  000002  003010  ACTSHO: MOV     #SHOW,KEYWD1    ;SET LOC. TO SAY A SHOW WAS TYPED
 5112  030146  000207                          RTS     PC
 5113
 5114  030150  012702  003016          ACTHLP: MOV     #HLPTAB,R2      ;SETUP R2 AS A POINTER TO HELP MSG TABLE
 5115  030154                          1$:     PRINTF  #HLPF,(R2)+     ;PRINT HELP INFORMATION MESSAGES
 5116  030154  012246                                                          MOV     (R2)+,-(SP)
 5117  030156  012746  012271                                                  MOV     #HLPF,-(SP)
 5118  030162  012746  000002                                                  MOV     #2,-(SP)
 5119  030166  010600                                                          MOV     SP,R0
 5120  030170  104417                                                          TRAP    C$PNTF
 5121  030172  062706  000006                                                  ADD     #6,SP
 5122  030176  020227  003036                  CMP     R2,#HLPEND      ;SEE IF ALL INFO PRINTED YET
 5123  030202  001364                          BNE     1$              ;IF NO KEEP PRINTING
 5124  030204  012737  000005  003010          MOV     #HLP,KEYWD1     ;SET LOC. TO SAY A HELP WAS TYPED
 5125  030212  000207                          RTS     PC
 5126
 5127  030214  012737  000057  003010  ACTEXT: MOV     #EXIT,KEYWD1    ;EXIT COMMAND WAS INPUT
 5128  030222  000207                          RTS     PC              ;RETURN
 5129
 5130  030224  012737  000055  003010  ACTPRT: MOV     #PRNT,KEYWD1    ;SET LOC. TO SAY A HELP WAS TYPED
 5131  030232  004737  020612                  JSR     PC,REPORT       ;CALL ROUTINE TO PRINT EVENT LOG AND BASE TABLE
 5132  030236  000207                          RTS     PC
 5133
 5134  030240  012737  000004  003010  ACTRUN: MOV     #RUN,KEYWD1     ;SET RUN FLAG
 5135  030246  112737  177777  003146          MOVB    #-1,P$NNUF      ;SET FLAG TO SAY NEED MORE OF COMMAND
 5136  030254  012737  000001  006600          MOV     #1,RPASS        ;SET DEFAULT RUN 'PASS' TO 1
 5137  030262  000207                          RTS     PC
 5138
 5139  030264  012737  006244  006444  ACTCSE: MOV     #PTR13,CMPPTR   ;INIT COMPARE MESSAGE POINTER
 5140  030272  013701  006444                  MOV     CMPPTR,R1
 5141
 5142  030276  013702  006446                  MOV     CMPTOT,R2
 5143  030302  105037  003146                  CLRB    P$NNUF          ;FLAG THAT HAVE VALID COMMAND AT THIS PT.
 5144  030306  023727  003010  000002          CMP     KEYWD1,#SHOW    ;SEE IF A CLEAR OR SHOW WAS TYPED
 5145  030314  001471                          BEQ     ACTSHW          ;BR IF A SHOW WAS TYPED
 5146  030316  012737  000001  006446          MOV     #1,CMPTOT       ;CLEAR COMPARE MESSAGE COUNT, CHAR. COUNT
 5147  030324  005037  006450                  CLR     CTOTCC          ; AND RESET POINTER
 5148
 5149  030330  012737  006244  006444          MOV     #PTR13,CMPPTR   ;INIT COMPARE MESSAGE POINTER
 5150  030336  013737  006444  006524          MOV     CMPPTR,CPTR     ;SET UP TO FILL IN DEFAULT MESSAGE
 5151  030344  012701  005150                  MOV     #CMPBUF,R1
 5152  030350  010137  006452                  MOV     R1,CCURAD
 5153  030354  000431                          BR      ACTCLB
 5154
 5155  030356  012701  006150          ACTCST: MOV     #PTRTAB,R1
 5156  030362  013702  006462                  MOV     TXMTOT,R2
 5157  030366  105037  003146                  CLRB    P$NNUF          ;FLAG THAT HAVE VALID COMMAND AT THIS PT.
 5158  030372  023727  003010  000002          CMP     KEYWD1,#SHOW    ;SEE IF A CLEAR OR SHOW WAS TYPED
 5159  030400  001437                          BEQ     ACTSHW          ;BR IF A SHOW WAS TYPED
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5160  030402  012737  000001  006462          MOV     #1,TXMTOT       ;CLEAR TRANSMIT MESSAGE COUNT, CHAR. COUNT
5161  030410  005037  006464                  CLR     TTOTCC          ; AND RESET POINTER
5162  030414  012737  006150  006442          MOV     #PTRTAB,TXPTR
5163  030422  013737  006442  006524          MOV     TXPTR,CPTR
5164  030430  012701  003150                  MOV     #TXBUF,R1
5165  030434  010137  006466                  MOV     R1,TCURAD
5166
5167  030440  012702  001000          ACTCLB: MOV     #BUFLIM,R2
5168  030444  010137  006526                  MOV     R1,CURADD       ;SET UP TO PUT DEFAULT MSG IN LIST AFTER 033'S
5169  030450  012737  000005  006516          MOV     #5,MSGTYP
5170  030456  013737  002162  006520          MOV     MSG5C,CURCC
5171  030464  105021                  1$:     CLRB    (R1)+           ;FILL EXPT OR TRAN BUFFER WITH 0'S IF A CLEAR
5172  030466  005302                          DEC     R2              ;DO 'BUFLIM" NUMBER OF BYTE LOCATIONS
5173  030470  001375                          BNE     1$
5174  030472  004737  023364                  JSR     PC,BLDBUF       ;"CLEAR" REALLY MEANS TO PUT DEFAULT MSG IN
5175  030476  000207                          RTS     PC              ;WHEN DONE, RETURN TO PARSER
5176
5177
5178  030500  012705  003072          ACTSHW: MOV     #SHTAB,R5
5179  030504  122571  000000          5$:     CMPB    (R5)+,@(R1)     ;LOOK AT FIRST BYTE OF MSG TO DECIPHER TYPE
5180  030510  001404                          BEQ     6$
5181  030512  020527  003101                  CMP     R5,#SHTEND      ;SEE IF LOOKED AT ALL OF DEFAULTS YET
5182  030516  001372                          BNE     5$
5183  030520  005205                          INC     R5              ;MUST BE OPR. SPEC'D THEN
5184  030522  162705  003073          6$:     SUB     #SHTAB+1,R5
5185  030526  006305                          ASL     R5
5186  030530  016137  000002  006534          MOV     2(R1),TEMP
5187  030536                                  PRINTF  #SHMSG,SHTYTB(R5),TEMP  ;PRINT MSG SIZE & TYPE
5188  030536  013746  006534                                                  MOV     TEMP,-(SP)
5189  030542  016546  003052                                                  MOV     SHTYTB(R5),-(SP)
5190  030546  012746  013516                                                  MOV     #SHMSG,-(SP)
5191  030552  012746  000003                                                  MOV     #3,-(SP)
5192  030556  010600                                                          MOV     SP,R0
5193  030560  104417                                                          TRAP    C$PNTF
5194  030562  062706  000010                                                  ADD     #10,SP
5195  030566  062701  000004                  ADD     #4,R1           ;BUMP R1 TO NEXT SET OF POINTERS
5196  030572  005302                          DEC     R2
5197  030574  001341                          BNE     ACTSHW
5198  030576  013737  006570  007704          MOV     MODTYP,DEV1
5199  030604  013737  006572  007706          MOV     MLTYP,DEV2
5200  030612  013737  006600  007710          MOV     RPASS,DEV3
5201  030620  013737  006576  007712          MOV     PARAM,DEV4
5202  030626  004737  023714                  JSR     PC,SHWOP        ;SHOW THE OPERATOR THE CURRENT MODE..... ALSO
5203  030632  000207                          RTS     PC
5204
5205  030634  013737  003142  006510  ACTDMS: MOV     P$NUM,STADD     ;SETUP STARTING ADDRESS FOR DUMP
5206  030642  005037  006514                  CLR     BYTBIT          ;SET DEFAULT OF WORD DUMP
5207  030646  012737  000052  003010          MOV     #DMPS,KEYWD1    ;FLAG THAT A DUMP WAS TYPED
5208  030654  000403                          BR      ACTDME
5209
5210  030656  012737  177777  006514  ACTDMQ: MOV     #-1,BYTBIT      ;SET DUMP FLAG TO "DUMP-WORD"
5211  030664  013737  003142  006512  ACTDME: MOV     P$NUM,ENADD     ;SETUP END ADDRESS FOR DUMP (=START IF NO "EEE"
5212  030672  105037  003146          ACTDMX: CLRB    P$NNUF          ;CLEAR NOT-ENOUGH FLAG, "DUMP N-N/B" IS VALID
5213  030676  000207                          RTS     PC
5214
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 5215
 5216
 5217
 5218  030700  012737  000010  003010  ACTSTE: MOV     #SETEXP,KEYWD1
 5219  030706  000403                          BR      ACTSTX
 5220
 5221  030710  012737  000011  003010  ACTSTT: MOV     #SETTRN,KEYWD1
 5222  030716  012737  000001  003014  ACTSTX: MOV     #1,QUALVL       ;SET UP DEFAULT COPY TO 1 (/COPY=0)
 5223  030724  000207                          RTS     PC
 5224
 5225  030726  012737  000012  003012  ACTSZE: MOV     #SIZE,QUALFG
 5226  030734  000207                          RTS     PC
 5227
 5228  030736  012737  000013  003012  ACTCOP: MOV     #QCOPY,QUALFG
 5229  030744  000207                          RTS     PC
 5230
 5231  030746  023727  003012  000012  ACTNUM: CMP     QUALFG,#SIZE    ;SEE IF A SIZE OR COPY TYPED
 5232  030754  001023                          BNE     1$              ;BR IF IT WAS A COPY
 5233  030756  005737  003142                  TST     P$NUM           ;CHECK TO BE SURE DIDN'T TRY SIZE=0
 5234  030762  001014                          BNE     3$              ; BR IF NO
 5235  030764                                  PRINTF  #CLISEO
 5236  030764  012746  012072                                                  MOV     #CLISEO,-(SP)
 5237  030770  012746  000001                                                  MOV     #1,-(SP)
 5238  030774  010600                                                          MOV     SP,R0
 5239  030776  104417                                                          TRAP    C$PNTF
 5240  031000  062706  000004                                                  ADD     #4,SP
 5241  031004  112737  177777  003147          MOVB    #-1,P$GDBD      ;SEE ERROR-IN-CMD FLAG
 5242  031012  000411                          BR      2$
 5243  031014  013737  003142  006520  3$:     MOV     P$NUM,CURCC     ;IF A SIZE LOAD CURCC WITH BYTE COUNT
 5244  031022  000405                          BR      2$
 5245  031024  013737  003142  003014  1$:     MOV     P$NUM,QUALVL    ;IF A COPY, LOAD COPY COUNT
 5246  031032  005237  003014                  INC     QUALVL          ;INCREMENT SO FIRST DEC MAKES IT REAL #
 5247  031036  000522                  2$:     BR      ACTMEX
 5248
 5249  031040  012737  000007  006516  ACTOPM: MOV     #7,MSGTYP
 5250  031046  010437  006534                  MOV     R4,TEMP         ;KEEP TRACK OF START OF QUOTED TEXT
 5251  031052  005237  006534                  INC     TEMP            ; SO CAN CALC OPCNT AT END OF QUOTES
 5252  031056  000207                          RTS     PC
 5253
 5254  031060  010402                  ACTEQO: MOV     R4,R2
 5255  031062  163702  006534                  SUB     TEMP,R2
 5256  031066  010237  006520                  MOV     R2,CURCC        ;CALC BYTE COUNT FOR QUOTED TEXT
 5257  031072  010237  002166                  MOV     R2,OPCNT
 5258  031076  013701  006534                  MOV     TEMP,R1
 5259  031102  012705  002520                  MOV     #OPBUF,R5
 5260  031106  112125                  1$:     MOVB    (R1)+,(R5)+     ;COPY QUOTED TEXT TO OPBUF
 5261  031110  005302                          DEC     R2
 5262  031112  001375                          BNE     1$
 5263  031114  000473                          BR      ACTMEX
 5264
 5265  031116                          ACTBCR: PRINTF  #CLIBCR         ;BAD CHAR. IN OPR. QUOTED STRING
 5266  031116  012746  012025                                                  MOV     #CLIBCR,-(SP)
 5267  031122  012746  000001                                                  MOV     #1,-(SP)
 5268  031126  010600                                                          MOV     SP,R0
 5269  031130  104417                                                          TRAP    C$PNTF
 5270  031132  062706  000004                                                  ADD     #4,SP
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 5271  031136  000207                        RTS     PC
 5272
 5273  031140  005037  006516          ACTMS0: CLR     MSGTYP
 5274  031144  000435                        BR      ACTME1
 5275  031146  012737  000001  006516  ACTMS1: MOV     #1,MSGTYP               ;SET MESSAGE TYPE = ALL ONES
 5276  031154  000431                        BR      ACTME1
 5277  031156  012737  000002  006516  ACTMS2: MOV     #2,MSGTYP               ;SET MESSAGE TYPE = ONES & ZEROS
 5278  031164  000425                        BR      ACTME1
 5279  031166  012737  000003  006516  ACTMS3: MOV     #3,MSGTYP               ;SET MESSAGE TYPE = ZEROS & ONES
 5280  031174  000421                        BR      ACTME1
 5281  031176  012737  000004  006516  ACTMS4: MOV     #4,MSGTYP               ;SET MESSAGE TYPE = CCITT
 5282  031204  000415                        BR      ACTME1
 5283  031206  012737  000005  006516  ACTMS5: MOV     #5,MSGTYP               ;SET MESS TYPE = QUICK FOX
 5284  031214  013737  002162  006520          MOV     MSG5C,CURCC             ;SETUP DEFAULT SIZE FOR THIS TYPE
 5285  031222  000430                        BR      ACTMEX
 5286  031224  012737  000006  006516  ACTMS6: MOV     #6,MSGTYP               ;SET MESSAGE TYPE = ALPHA/NUM
 5287  031232  013737  002164  006520          MOV     MSG6C,CURCC             ;SETUP DEFAULT SIZE FOR THIS TYPE
 5288
 5289  031240  012737  000100  006520  ACTME1: MOV     #64.,CURCC              ;SETUP DEFAULT SIZE FOR MSG0-4
 5290  031246  000416                        BR      ACTMEX                  ;BRANCH TO EXIT
 5291
 5292  031250  022737  000010  003010  ACTSEX: CMP     #SETEXP,KEYWD1          ;DID WE GET HERE FROM ''SET E=''COMMAND?
 5293  031256  001404                        BEQ     10$                     ;YES,BRANCH
 5294  031260  112737  000001  003147          MOVB    #1,P$GDBD               ;SET ERROR FLAG
 5295  031266  000406                        BR      ACTMEX                  ;GO EXIT SUBROUTINE
 5296  031270  004737  023510          10$:    JSR     PC,FACSIMILE            ;GO COPY TRANSMIT LIST TO EXPECT LIST
 5297  031274  012737  000060  003010          MOV     #SETET,KEYWD1           ;SET FLAG TO BE USED IN T1::
 5298  031302  000400                        BR      ACTMEX                  ;EXIT SUBROUTINE
 5299
 5300  031304  105037  003146  ACTMEX: CLRB    P$NNUF                  ;CLEAR NOT-ENOUGH FLAG
 5301  031310  000207                        RTS     PC
 5302
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 5303  031312  012737  000003  006570  ACTATV: MOV     #ACT,MODTYP             ;MODE = ACTIVE
 5304  031320  000432                          BR      ACTM2X
 5305
 5306  031322  012737  000002  006570  ACTPAS: MOV     #PAS,MODTYP             ;MODE = PASSIVE
 5307  031330  105037  003146                  CLRB    P$NNUF                  ;CLEAR NOT-ENOUGH FLAG
 5308  031334  005037  006572                  CLR     MLTYP                   ;CLEAR MAINT LOOP TYPE
 5309  031340  000207                          RTS     PC
 5310
 5311  031342  005037  006570          ACTREC: CLR     MODTYP                  ;MODE = RECEIVE
 5312  031346  000417                          BR      ACTM2X
 5313
 5314  031350  012737  000006  006570  ACTLIS: MOV     #LIS,MODTYP             ;MODE = LISTEN
 5315  031356  000413                          BR      ACTM2X
 5316
 5317  031360  012737  000004  006570  ACTDLL: MOV     #DOW,MODTYP             ;MODE = DOWNLINE LOAD
 5318  031366  000407                          BR      ACTM2X
 5319
 5320  031370  012737  000001  006570  ACTTRA: MOV     #TRA,MODTYP             ;MODE = TRANSMIT
 5321  031376  000403                          BR      ACTM2X
 5322
 5323  031400  012737  000005  006570  ACTTAL: MOV     #TAL,MODTYP             ;MODE = TALK
 5324
 5325  031406  042737  000004  006576  ACTM2X: BIC     #ECHOB,PARAM            ;DISABLE /ECHO (ALL BUT PASSIVE MODE)
 5326  031414  105037  003146                  CLRB    P$NNUF                  ;CLEAR NOT-ENOUGH FLAG
 5327  031420  005037  006572                  CLR     MLTYP                   ;CLEAR MAINT LOOP TYPE
 5328  031424  000207                          RTS     PC
 5329
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 5330  031426  012737  000036  003012  ACTNO:  MOV     #NO,QUALFG
 5331  031434  000207                  RTS     PC
 5332
 5333  031436  022737  000036  003012  ACTECH: CMP     #NO,QUALFG
 5334  031444  001422                  BEQ     1$
 5335  031446  052737  000004  006576          BIS     #ECHOB,PARAM
 5336  031454  022737  000002  006570          CMP     #PAS,MODTYP             ;BE SURE IN PASSIVE MODE IF
 5337  031462  001416                  BEQ     2$                              ;IF TRYING TO SET /ECHO
 5338  031464                          PRINTF  #CLINPS
 5339  031464  012746  011762                                                          MOV     #CLINPS,-(SP)
 5340  031470  012746  000001                                                          MOV     #1,-(SP)
 5341  031474  010600                                                                  MOV     SP,R0
 5342  031476  104417                                                                  TRAP    C$PNTF
 5343  031500  062706  000004                                                          ADD     #4,SP
 5344  031504  112737  177777  003147          MOVB    #-1,P$GDBD
 5345  031512  042737  000004  006576  1$:     BIC     #ECHOB,PARAM
 5346  031520  005037  003012          2$:     CLR     QUALFG                  ;CLEAR 'NO' OUT OF QUALIFIER FLAG
 5347  031524  000501                  BR      ACTLXX
 5348
 5349  031526  012701  000002          ACTCHK: MOV     #DATCKB,R1              ;SET DATA CHECK BIT
 5350  031532  000413                  BR      ACTQFG
 5351
 5352  031534  012701  000001          ACTSTS: MOV     #STATB,R1       ;SET THE STATUS BIT
 5353  031540  000410                  BR      ACTQFG
 5354
 5355  031542  012701  000020          ACTCRC: MOV     #CRCB,R1        ;SET THE CRC BIT
 5356  031546  000405                  BR      ACTQFG
 5357
 5358  031550  012701  000010          ACTMOS: MOV     #MOCHK,R1       ;SET THE MODEM BIT
 5359  031554  000402                  BR      ACTQFG
 5360
 5361  031556  012701  000040          ACTPRO: MOV     #PROTOB,R1      ;SET THE PROTOCOL BIT
 5362
 5363  031562  050137  006576          ACTQFG: BIS     R1,PARAM
 5364  031566  022737  000036  003012          CMP     #NO,QUALFG
 5365  031574  001002                  BNE     1$
 5366  031576  040137  006576                  BIC     R1,PARAM
 5367  031602  005037  003012          1$:     CLR     QUALFG                  ;CLEAR 'NO' OUT OF QUALIFIER FLAG
 5368  031606  000450                  BR      ACTLXX
 5369
 5370  031610  013737  003142  006600  ACTRPS: MOV     P$NUM,RPASS             ;GET NUMBER OF 'RUN PASSES'
 5371  031616  000444                  BR      ACTLXX
 5372
 5373  031620  012737  000005  006572  ACTMOP: MOV     #5,MLTYP
 5374  031626  000417                  BR      ACTLPX
 5375  031630  012737  000001  006572  ACTTLP: MOV     #1,MLTYP
 5376  031636  000413                  BR      ACTLPX
 5377  031640  012737  000002  006572  ACTCLP: MOV     #2,MLTYP
 5378  031646  000407                  BR      ACTLPX
 5379  031650  012737  000003  006572  ACTLLP: MOV     #3,MLTYP
 5380  031656  000403                  BR      ACTLPX
 5381  031660  012737  000004  006572  ACTRLP: MOV     #4,MLTYP
 5382
 5383  031666  022737  000003  006570  ACTLPX: CMP     #ACT,MODTYP     ;BE SURE IN ACTIVE IF TRYING TO SET LOOP
 5384  031674  001415                  BEQ     ACTLXX          ; BR IF IN ACTIVE
 5385  031676  112737  177777  003147          MOVB    #-1,P$GDBD
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 5386  031704  005037  006572          CLR     MLTYP           ;CLEAR ANY LOOP TYPE THAT MAY HAVE GOT SET
 5387  031710                          PRINTF  #CLIBDL
 5388  031710  012746  011720                                                  MOV     #CLIBDL,-(SP)
 5389  031714  012746  000001                                                  MOV     #1,-(SP)
 5390  031720  010600                                                          MOV     SP,R0
 5391  031722  104417                                                          TRAP    C$PNTF
 5392  031724  062706  000004                                                  ADD     #4,SP
 5393  031730  105037  003146  ACTLXX: CLRB    P$NNUF          ;CLEAR NOT-ENOUGH FLAG
 5394  031734  000207                  RTS     PC
 5395
```

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5396
5397
5398  031736  005737  006572          GTR9:   TST     MLTYP           ;LOOP MODE ?
5399  031742  001422                          BEQ     10$             ;NO,BRANCH
5400  031744  032737  000002  006576          BIT     #DATCKB,PARAM   ;DATA CHECK ?
5401  031752  001416                          BEQ     10$             ;NO,BRANCH
5402  031754  023737  006446  006462          CMP     CMPTOT,TXMTOT   ;TX = EX ?
5403  031762  001412                          BEQ     10$             ;YES,BRANCH
5404  031764                                  PRINTF  #CLIPW          ;PRINT WARNING
5405  031764  012746  012123                                                  MOV     #CLIPW,-(SP)
5406  031770  012746  000001                                                  MOV     #1,-(SP)
5407  031774  010600                                                          MOV     SP,R0
5408  031776  104417                                                          TRAP    C$PNTF
5409  032000  062706  000004                                                  ADD     #4,SP
5410  032004  000137  026764                  JMP     GETCL           ;TRY AGAIN
5411
5412
5413                                  ; RX ALLOCATE CODE
5414  032010  012737  006150  006442  10$:    MOV     #PTRTAB,TXPTR   ;INIT TRANSMIT MESSAGE POINTER
5415  032016  012737  006244  006444          MOV     #PTR13,CMPPTR   ;INIT COMPARE MESSAGE POINTER
5416  032024  012737  006340  006440          MOV     #PTR23,RXPTR    ;INIT RECEIVE MESSAGE POINTER
5417
5418  032032  013737  006446  006476          MOV     CMPTOT,RXMTOT   ;MAKE COMPARE AND RX MESSAGE COUNTS EQUAL
5419
5420
5421  032040  005037  006602          GTREX:  CLR     FLAG            ;CLEAR FLAG
5422  032044  005037  006502                  CLR     OPVAR           ;CLEAR OPTIONAL VARIABLE COUNTER
5423  032050  005037  006504                  CLR     PSCNT           ;CLEAR PASS COUNT
5424  032054  005037  006506                  CLR     ERRCNT          ;CLEAR ERROR COUNT
5425  032060  005037  011516                  CLR     MGLCNT          ;CLEAR GLITCH COUNT
5426  032064  005037  011520                  CLR     MHRCNT          ;CLEAR HARD ERR. COUNT
5427  032070  005037  006500                  CLR     LNCNT           ;CLEAR LINE COUNTER
5428  032074  012737  000626  011506          MOV     #626,SYNCW      ;SET UP SYNCW FOR 226 SYNC +TSOM
5429  032102  052737  000200  011470          BIS     #BIT7,DUPPAR    ;RX SYNC=226
5430  032110  005737  011522                  TST     RNODE
5431  032114  001406                          BEQ     1$              ;IF NON ITEP GO TO 1
5432  032116  042737  000200  011470          BIC     #BIT7,DUPPAR    ;SET UP FOR 26 SYNC WORD ON RX.
5433  032124  012737  000426  011506          MOV     #426,SYNCW      ;ELSE SET UP SYNC FOR 26 AND TSOM
5434  032132  004737  020200          1$:     JSR     PC,LOGDVI       ;LOG ABOUT TO INIT DEVICE
5435  032136  004737  034306                  JSR     PC,DVINIT       ;INIT DEVICE
5436
5437  032142  012737  001000  006520  GTRX2:  MOV     #BUFLIM,CURCC   ;SET CHAR COUNT TO 'BUFLIM'' NO. OF BYTES
5438  032150  012737  004150  006526          MOV     #RXBUF,CURADD   ;SET UP RX BUFFER AS CURRRENT ADD.
5439  032156  013737  006440  006524          MOV     RXPTR,CPTR
5440  032164  012737  000010  006516          MOV     #10,MSGTYP      ;SET UP FOR 33 TO FILL RX BUFFERS
5441  032172  004737  023364                  JSR     PC,BLDBUF       ;CLEAR RX BUFFER
5442  032176  013702  006570                  MOV     MODTYP,R2
5443  032202  006302                          ASL     R2
5444  032204  000172  006604                  JMP     @MODE(R2)       ;MODE DISPATCH
5445
```

```
 5446                                   .SBTTL          RECEIVE MODE SECTION
 5447                                   ;++
 5448                                   ; FUNCTIONAL DESCRIPTION:
 5449                                   ;       RECEIVE-ONLY (OR ONE-WAY-IN) ROUTINE
 5450                                   ;       IN THIS MODE OF TESTING THE DEVICE'S RECEIVER IS ENABLED IN EXPECTATION
 5451                                   ;       OF RECEIVING A MESSAGE.  AFTER RECEIVING AN 'EXPECTED' NUMBER OF
 5452                                   ;       MESSAGES, THE DATA RECEIVED CAN BE COMPARED AGAINST A LIST OF 'EXPECT
 5453                                   ;       TO RECEIVE' MESSAGES IF DATA-CHECKING IS ENABLED.
 5454                                   ;
 5455                                   ; SUBORDINATE ROUTINES USED:
 5456                                   ;               'ALLTR'
 5457                                   ;
 5458                                   ; CALLING SEQUENCE:
 5459                                   ;       JMP     @MODE(R2)       ;DISPATCH TO MODE BASED ON MODE TYPE IN R2
 5460                                   ;--
 5461
 5462  032210                           RXONLY:
 5463  032210  013737  006440  006522  RXON2:  MOV     RXPTR,CPTRR
 5464  032216  013737  006476  006474          MOV     RXMTOT,DVRCT    ;SET UP MESSAGE COUNT
 5465  032224  052737  000104  006602          BIS     #QRX+#ERX,FLAG  ;SET UP RX QUE
 5466  032232  005037  006524                  CLR     CPTR            ;CLEAR THE TX POINTER
 5467  032236  000137  032400                  JMP     ALLTR           ;GO RX.
 5468
```

```
                                .SBTTL          TRANSMIT MODE SECTION

                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       TRANSMIT-ONLY (OR ONE-WAY-OUT) ROUTINE
                                ;       IN THIS MODE OF TESTING A LIST OF MESSAGES IS TRANSMITTED WITHOUT
                                ;       EXPECTING ANY DATA TO BE RECEIVED.  A REPETITION COUNT CAN BE
                                ;       SPECIFIED TO REPETITIVELY TRANSMIT THE LIST.
                                ;
                                ; SUBORDINATE ROUTINES USED:
                                ;               "ALLTR"
                                ;
                                ; CALLING SEQUENCE:
                                ;       JMP     @MODE(R2)       ;DISPATCH TO MODE BASED ON MODE TYPE IN R2
                                ;--

032242  042737  000002  006576  TXONLY: BIC     #DATCKB,PARAM   ;SET NOCHECK
032250  013737  006442  006524  TXON2:  MOV     TXPTR,CPTR
032256  013737  006462  006460          MOV     TXMTOT,DVTCT    ;COPY COUNTER FOR THIS PASS
032264  052737  000210  006602          BIS     #QTX+#ETX,FLAG  ;SET THE QUE TX FLAG
032272  005037  006522                  CLR     CPTRR           ;CLEAR RX POINTER
032276  000137  032400                  JMP     ALLTR           ;GO TX.
```

```
                                .SBTTL          PASSIVE MODE SECTION

                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       PASSIVE MODE SECTION
                                ;       IN THIS MODE OF TESTING, THE DEVICE'S RECEIVER IS ENABLED IN
                                ;       EXPECTATION OF RECEIVING A MESSAGE.  THEN EVERY TIME A MESSAGE IS
                                ;       RECEIVED, A MESSAGE IS TRANSMITTED.  DATA CHECKING CAN BE DONE ON THE
                                ;       RECEIVED DATA.
                                ;
                                ; SUBORDINATE ROUTINES USED:
                                ;
                                ;               "ALLTR"
                                ;
                                ; CALLING SEQUENCE:
                                ;       JMP     @MODE(R2)       ;DISPATCH TO MODE BASED ON MODE TYPE IN R2
                                ;--

032302                          PLCK:
032302  013737  006462  006460  PLCK2:  MOV     TXMTOT,DVTCT    ;SET UP  THE TRANSMIT COUNT
032310  013737  006442  006524          MOV     TXPTR,CPTR      ;SET UP CPTR TO TRANSMIT POINTER
032316  013737  006440  006522  PLCK3:  MOV     RXPTR,CPTRR     ;SET UP CPTRR TO REC POINTER
032324  052737  000104  006602          BIS     #QRX+#ERX,FLAG  ;SET UP Q AND EXPECT RX
032332  000137  032400                  JMP     ALLTR           ;AND GO RX FIRST MSG.
```

```
                                .SBTTL          ACTIVE MODE SECTION

                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       ACTIVE MODE SECTION
                                ;       IN THIS MODE OF TESTING A LIST OF MESSAGES IS TRANSMITTED AND
                                ;       MESSAGES ARE EXPECTED TO BE RECEIVED.  RECEIVED DATA CAN BE COMPARED
                                ;       AGAINST "EXPECTED" DATA IF DATA-CHECKING IS ENABLED.
                                ;               NOTE: IF BOTH ENDS OF THE LINK ARE IN ACTIVE MODE, THEN THE
                                ;                       LINK MUST BE A FULL DUPLEX LINK!
                                ;
                                ; SUBORDINATE ROUTINES USED:
                                ;
                                ;               "ALLTR"
                                ;
                                ; CALLING SEQUENCE:
                                ;       JMP     @MODE(R2)       ;DISPATCH TO MODE BASED ON MODE TYPE IN R2
                                ;--

032336  013737  006462  006460  ALCK:   MOV     TXMTOT,DVTCT    ;# OF MESSAGES TO TRANSMIT(DEVICE TX COUNT)
032344  013737  006442  006524          MOV     TXPTR,CPTR      ;SETUP TX MESSAGE LIST POINTER
032352  013737  006476  006474          MOV     RXMTOT,DVRCT    ;# OF MESSAGES TO RECEIVE(DEVICE RX COUNT)
032360  013737  006440  006522          MOV     RXPTR,CPTRR     ;SETUP RX MESSAGE LIST POINTER
032366  052737  000314  006602          BIS     #QRX+#QTX+#ETX+#ERX,FLAG
032374  000137  032400                  JMP     ALLTR
```

```
5544                                    .SBTTL          TRANSMIT - RECEIVE FOR ALL STANDARD MODES
5545
5546                                    ;++
5547                                    ; FUNCTIONAL DESCRIPTION:
5548                                    ;       THIS CODE PERFORMS THE FOLLOWING FUNCTIONS
5549                                    ;       1.) IF RX BUFFERS ARE TO BE QUED,TELL DEVICE
5550                                    ;           CODE TO QUE THEM ,LOG RECEIVE QUED.
5551                                    ;       2.) IF TX BUFFERS ARE TO BE QUED ,TELL DEVICE
5552                                    ;           CODE TO QUE THEM, LOG TRANSMIT QUED.
5553                                    ;       3.) WAIT FOR EITHER RECIVE BUFFER OR TRANSMIT BUFFER OR
5554                                    ;           BOTH TO COMPLETE
5555                                    ;       4.) IF RECEIVE COMPLETE LOG IT UPDATE RX TABLE IF DATA
5556                                    ;           CHECKING.
5557                                    ;       5.) IF TRANSMIT COMPLETE LOG IT.
5558                                    ;       6.) WHEN BOTH TRANSMIT AND RECIEVE LISTS ARE DONE
5559                                    ;           GO TO THE COMPARE BUFFER CODE
5560                                    ;
5561                                    ; SUBORDINATE ROUTINES USED:
5562                                    ;               'DVRXQ'' -QUE RECEIVE BUFFER SPACE TO DEVICE
5563                                    ;               'LOGRXQ''-LOG RECEIVE BUFFER SPACE TO EVENT LOG
5564                                    ;               'LOGTXQ''-LOG TRANSMIT BUFFER QUED TO EVENT LOG
5565                                    ;               'DVTXRX''-QUE TRANSMIT BUFFER AND WAIT FOR RX
5566                                    ;                         OR TX TO COMPLETE
5567                                    ;               'LOGRXC''-LOG RECEIVE BUFFER COMPLETED TO EVENT LOG
5568                                    ;               'LOGTXC''-LOG TRANSMIT BUFFER COMPLETED TO EVENT LOG
5569                                    ;
5570                                    ; USE OF FLAG BITS:
5571                                    ;               QRX - SET ON INPUT TO ALLTR IF REC IS TO BE QUED TO
5572                                    ;                     DEVICE. CLEARED BY DVRXQ AND THEN SET BY DVTXRX
5573                                    ;                     WHEN RX BUFFER IS COMPLETED.
5574                                    ;               QTX - SET ON INPUT TO ALLTR IF TRANSMIT IS TO BE QUED TO
5575                                    ;                     DEVICE. CLEARED ON ENTRY TO DVTXRX AND SET BY DVTXRX
5576                                    ;                     WHEN TX BUFFER IS COMPLETED.
5577                                    ;               ETX - USED BY DVTXRX TO DETERMINE IF TX BUFFER COMPLETED IS
5578                                    ;                     EXPECTED.
5579                                    ;               ERX - USED BY DVTXRX TO DETERMINE IF RX BUFFER COMPLETED IS
5580                                    ;                     EXPECTED.
5581                                    ;
5582                                    ;
5583                                    ; CALLING SEQUENCE:
5584                                    ;       JMP     ALLTR           ;GO TO TRANSMIT-RECEIVE FOR ALL STANDARD MODES
5585                                    ;--
5586
5587
5588  032400                            ALLTR:
5589  032400  032737  000004  006602    ALCK5:  BIT     #QRX,FLAG       ;QUE RX ADDRESS & COUNT? (ARE WE RECEIVING?)
5590  032406  001424                            BEQ     ALCK1           ;NO,BRANCH ?
5591  032410  013702  006522                    MOV     CPTRR,R2        ;GET CURRENT RX MESSAGE LIST POINTER(POINTS
5592                                                                    ;;TO RX MESSAGE LIST POINTER TABLE)
5593  032414  011237  006540                    MOV     (R2),TEMP2      ;SAVE RX ADDRESS FOR LOG
5594  032420  012237  006470                    MOV     (R2)+,DVRXA     ;DEVICE RX ADDRESS
5595  032424  011237  006542                    MOV     (R2),TEMP3      ;SAVE RX CHAR COUNT FOR LOG
5596  032430  011237  006472                    MOV     (R2),DVRCC      ;DEVICE RX CHARACTER COUNT
5597  032434  010237  006522                    MOV     R2,CPTRR        ;STORE UPDATED RX POINTER
5598  032440  004737  020134                    JSR     PC,LOGRXQ       ;LOG RECEIVER QUED
5599  032444  032737  000040  006576  10$:     BIT     #PROTOB,PARAM   ;'/PROTOCOL' ?
```

```
 5600  032452  001002                          BNE     ALCK1           ;YES,BRANCH
 5601  032454  004737  035170                  JSR     PC,DVRXQ        ;GO QUE RX BUFFERS & ENABLE RECEIVER
 5602
 5603  032460  032737  000010  006602  ALCK1:  BIT     #QTX,FLAG       ;ARE WE TRANSMITTING ?
 5604  032466  001416                          BEQ     ALCK2           ;NO,BRANCH
 5605  032470  013702  006524                  MOV     CPTR,R2         ;CURRENT TRANSMIT MESSAGE LIST POINTER
 5606  032474  011237  006540                  MOV     (R2),TEMP2      ;SAVE ADDRESS FOR LOG
 5607  032500  012237  006454                  MOV     (R2)+,DVTXA     ;TRANSMIT BUFFER ADDRESS
 5608  032504  011237  006542                  MOV     (R2),TEMP3      ;SAVE CHAR COUNT FOR LOG
 5609  032510  012237  006456                  MOV     (R2)+,DVTCC     ;TRANSMIT CHAR COUNT
 5610  032514  010237  006524                  MOV     R2,CPTR         ;SAVE UPDATED POINTER
 5611  032520  004737  020100                  JSR     PC,LOGTXQ       ;LOG TX QUE
 5612
 5613  032524  032737  000040  006576  ALCK2:  BIT     #PROTOB,PARAM   ;'/PROTOCOL' ?
 5614  032532  001410                          BEQ     10$             ;NO,BRANCH
 5615  032534  004737  040706                  JSR     PC,PROTOC       ;GO DO DDCMP PROTOCOL PROCESSING
 5616  032540  032737  000200  006576          BIT     #ABORT,PARAM    ;PROTOCOL ABORT ?
 5617  032546  001404                          BEQ     20$             ;NO,BRANCH
 5618  032550  000137  026644                  JMP     GTRA5           ;ABORT!! AND RETURN TO 'DCLT >' PROMPT
 5619
 5620  032554  004737  035272          10$:    JSR     PC,DVTXRX       ;IF TRANSMITTING QUE TX BUFFERS & ENABLE TX
 5621                                                                  ;;WAIT FOR TX/RX COMPLETE
 5622  032560  032737  000004  006602  20$:    BIT     #QRX,FLAG       ;RECEIVED MESSAGE ?
 5623  032566  001514                          BEQ     ALCK3           ;NO,BRANCH
 5624  032570  013737  006470  006540          MOV     DVRXA,TEMP2     ;RX BUFFER ADDRESS
 5625  032576  013737  006472  006542          MOV     DVRCC,TEMP3     ;RX CHAR COUNT
 5626  032604  004737  020152                  JSR     PC,LOGRXC       ;LOG REC COMPLETE
 5627  032610  032737  000004  006576  UPTABL: BIT     #ECHOB,PARAM    ;IS THIS ECHO MODE(PASSIVE)
 5628  032616  001406                          BEQ     UPTA4           ;IF NOT GO TO 4
 5629  032620  013702  006524                  MOV     CPTR,R2         ;ELSE SET R2 TO PRESENT TX TABL
 5630  032624  013722  006540                  MOV     TEMP2,(R2)+     ;STORE OFF RX ADD
 5631  032630  013712  006542                  MOV     TEMP3,(R2)      ;AND CC
 5632  032634  032737  000002  006576  UPTA4:  BIT     #DATCKB,PARAM   ;IS DATA CHECKING ASKED FOR
 5633  032642  001015                          BNE     UPTA1           ;IF SO GO TO 1
 5634  032644  012737  000001  006474          MOV     #01,DVRCT       ;ELSE SET DVRCT TO A 1
 5635  032652  013737  006440  006522          MOV     RXPTR,CPTRR     ;RESET POINTER
 5636  032660  022737  000003  006570          CMP     #ACT,MODTYP     ;IS THIS ACTIVE
 5637  032666  001002                          BNE     UPTA3
 5638  032670  005237  006474                  INC     DVRCT           ;IF YES BUMP COUNT
 5639  032674  000424                  UPTA3:  BR      UPTEX
 5640  032676  013702  006522          UPTA1:  MOV     CPTRR,R2
 5641  032702  011237  006534                  MOV     (R2),TEMP       ;LOAD TEMP WITH PREV. COUNT
 5642  032706  163737  006542  006534          SUB     TEMP3,TEMP      ;LOAD TEMP WITH PREV.COUNT-CURRENT
 5643  032714  013722  006542                  MOV     TEMP3,(R2)+
 5644  032720  063737  006542  006540          ADD     TEMP3,TEMP2
 5645  032726  013722  006540                  MOV     TEMP2,(R2)+     ;STORE OF NEW ADD
 5646  032732  013712  006534                  MOV     TEMP,(R2)       ;AND NEW CC
 5647  032736  162702  000002                  SUB     #2,R2           ;PUT POINTER BACK TO ADDR.
 5648
 5649  032742  010237  006522                  MOV     R2,CPTRR        ;AND RESTORE IT.
 5650
 5651  032746                          UPTEX:
 5652  032746  022737  000002  006570          CMP     #PAS,MODTYP
 5653  032754  001007                          BNE     ALCK2A          ;IF NOT PASSIVE LOOP THEN GO TO 2A
 5654  032756  042737  000104  006602          BIC     #QRX+#ERX,FLAG  ;CLEAR BOTH EXPECTED AND COMPLETED FLAGS
 5655  032764  052737  000210  006602          BIS     #QTX+#ETX,FLAG  ;SET THE TX FLAGS
```

```
 5656  032772  000632                        BR      ALCK1
 5657
 5658  032774  005337  006474          ALCK2A: DEC     DVRCT           ;DEC REC COUNT
 5659  033000  005737  006474                  TST     DVRCT           ;IS IT ALL DONE
 5660  033004  001005                          BNE     ALCK3           ;NO. GO CHECK TX
 5661  033006  042737  000004  006602          BIC     #QRX,FLAG       ;CLEAR THE RX FLAG
 5662  033014  005037  006522                  CLR     CPTRR           ;YES. CLEAR POINTER
 5663  033020  032737  000010  006602  ALCK3:  BIT     #QTX,FLAG       ;IS IT TX
 5664  033026  001447                          BEQ     ALCK4           ;IF NOT TX THEN GO BACK
 5665  033030  013737  006454  006540          MOV     DVTXA,TEMP2
 5666  033036  013737  006456  006542          MOV     DVTCC,TEMP3     ;LOG TX COMPLETED
 5667  033044  004737  020116                  JSR     PC,LOGTXC
 5668  033050  005337  006460                  DEC     DVTCT           ;DEC TX COUNT
 5669  033054  022737  000002  006570          CMP     #PAS,MODTYP
 5670  033062  001013                          BNE     ALCK3A          ;IF NOT PASSIVE MODE GO TO 3A
 5671  033064  042737  000210  006602          BIC     #QTX+ETX,FLAG   ;CLEAR THE TX FLAGS
 5672  033072  052737  000104  006602          BIS     #QRX+ERX,FLAG   ;AND SET THE RX FLAGS
 5673  033100  005737  006460                  TST     DVTCT
 5674  033104  001005                          BNE     ALCK3C          ;IF MORE RX'S DO IT
 5675  033106  000137  033166                  JMP     CMPSR           ; ELSE COMPARE
 5676  033112  005737  006460          ALCK3A: TST     DVTCT           ;IS IT ALL DONE
 5677  033116  001402                          BEQ     ALCK3B          ;IF NOT GO BACK TO 5
 5678  033120  000137  032400          ALCK3C: JMP     ALCK5
 5679  033124  005037  006524          ALCK3B: CLR     CPTR            ;IF SO CLEAR POINTER
 5680  033130  042737  000010  006602          BIC     #QTX,FLAG       ;CLEAR TX FLAG
 5681  033136  032737  000002  006576          BIT     #DATCKB,PARAM   ;IS IT DAT CK
 5682  033144  001403                          BEQ     ALCK4A          ;IF NOT THEN END WO CKING RX.
 5683  033146  005737  006522          ALCK4:  TST     CPTRR
 5684
 5685  033152  001362                          BNE     ALCK3C          ;IF SOME RX'S LEFT GO BACK
 5686  033154  005737  006524          ALCK4A: TST     CPTR
 5687  033160  001402                          BEQ     ALCK4B          ;BRANCH IF ANY TX'S LEFT
 5688  033162  000137  032524                  JMP     ALCK2
 5689  033166                          ALCK4B:
 5690
 5691
 5692
```

```
5693                                    .SBTTL          DATA COMPARISON CODE
5694
5695
5696                                    ;++
5697                                    ; FUNCTIONAL DESCRIPTION:
5698                                    ;
5699                                    ;       CMPSR - COMPARE CODE
5700                                    ;       THIS CODE COMPARES THE RECEIVED DATA AGAINST THE
5701                                    ;       EXPECTED AND FILLS THE EVENT LOG WITH 1 OF 3 MSGS.
5702                                    ;
5703                                    ;       NOTE: IF NO DATA CHECKING SKIP THIS CODE
5704                                    ;
5705                                    ;       1.) A DATA COMPARISON ENTRY WHICH REPORTS THE NUMBER
5706                                    ;           OF COMPARISON ERRORS FOUND.
5707                                    ;       2.) A DATA COMPARISON ENTRY WHICH REPORTS DIFFERENCES
5708                                    ;           IN REC LENGTH TO COMPARE LENGTH.
5709                                    ;       3.) A DATA COMPARISON STARTED ENTRY WHICH REPORTS ADDRESS
5710                                    ;           OF RECEIVE BUFFER AND BYTE COUNT.
5711                                    ;       THIS CODE ALSO REPORTS SOFT ERRORS FOR DATA COMPARISON
5712                                    ;       (THE FIRST 5 ONLY),LENGTH ERROR,AND TOTAL NUMBER OF ERRORS
5713                                    ;
5714                                    ;
5715                                    ; SUBORDINATE ROUTINES USED:
5716                                    ;
5717                                    ;               "LOGCMP" - SEE ITEM 3 ABOVE
5718                                    ;               "LOGCML" - SEE ITEM 2 ABOVE
5719                                    ;               "LOGCMD" - SEE ITEM 1 ABOVE
5720                                    ;
5721                                    ; CALLING SEQUENCE:
5722                                    ;       JMP     CMPSR           ;JUMP TO DATA COMPARISON CODE
5723                                    ;--
5724
5725  033166  032737  000002  006576  CMPSR:  BIT     #DATCKB,PARAM   ;IS DATA CHECKING TO BE DONE
5726  033174  001522                          BEQ     CMPSEX          ;IF NOT THEN EXIT
5727  033176  013737  006440  006524          MOV     RXPTR,CPTR      ;PUT START OF RX POINTERS TO CPTR
5728  033204  013737  006444  006522          MOV     CMPPTR,CPTRR    ; AND START OF COMPARE POINTS TO CPTRR
5729  033212  013737  006476  006474          MOV     RXMTOT,DVRCT
5730
5731  033220                          CMPS3:
5732  033220  013702  006524                  MOV     CPTR,R2         ;MOVE CURRET RX PT.TO R2
5733  033224  011237  006540                  MOV     (R2),TEMP2      ;MOVE RX ADD TO EVENT LOG
5734  033230  012201                          MOV     (R2)+,R1        ;SET R1 TO START ADD OF RX
5735  033232  012237  006542                  MOV     (R2)+,TEMP3     ;SET CHAR  COUNT TO EVENT LOG
5736  033236  010237  006524                  MOV     R2,CPTR         ;RESTORE RX POINT
5737
5738  033242  013702  006522                  MOV     CPTRR,R2        ;PUT R2 AT COMPARE TABLE
5739  033246  012203                          MOV     (R2)+,R3        ;SET R3 TO COMPARE ADD
5740  033250  012204                          MOV     (R2)+,R4        ;SET R4 TO COMP CC
5741  033252  010237  006522                  MOV     R2,CPTRR        ;RESTORE POINTER
5742  033256  010437  006544                  MOV     R4,TEMP4
5743  033262  004737  020246                  JSR     PC,LOGCMP       ;LOG COMPARE START.
5744
5745  033266  020437  006542                  CMP     R4,TEMP3        ;IS COMPARE COUNT = TO RX COUNT
5746  033272  001410                          BEQ     CMPS7           ;IF SO GO TO 7
5747  033274  005237  006506                  INC     ERRCNT
5748  033300                                  ERRSOFT 1,EDDLE,ERR10   ;PRINT ERROR
```

```
5749  033300  104457                                                          TRAP    C$ERSOFT
5750  033302  000001                                                          .WORD   1
5751  033304  015330                                                          .WORD   EDDLE
5752  033306  017554                                                          .WORD   ERR10
5753  033310  004737  020264          JSR     PC,LOGCML       ;LOG LENGTH ERROR
5754
5755  033314  005037  006544  CMPS7:  CLR     TEMP4           ;CLEAR BAD BYTE COUNTER
5756  033320  012737  000001  006532  MOV     #1,OFSET        ;SET OFSET BYTE COUNT TO 1
5757  033326  122123          CMPS1:  CMPB    (R1)+,(R3)+     ;COMPARE RX WITH EXPETED
5758  033330  001422                  BEQ     CMPS6           ;IF EQUAL THEN GO TO 6
5759
5760  033332  005237  006544  CMPS2:  INC     TEMP4           ;INC BAD COUNT
5761  033336  023727  006544  000005  CMP     TEMP4,#5        ;IS IT MORE THEN 5
5762  033344  101014                  BHI     CMPS6           ;IF SO GO  FOR MORE
5763  033346  114337  006554          MOVB    -(R3),GOOD      ;STORE GOOD BYTE FOR ERROR
5764  033352  114137  006555          MOVB    -(R1),BAD       ;STORE BAD BYTE FOR ERROR
5765  033356  005237  006506          INC     ERRCNT
5766  033362                          ERRSOFT 2,EDDDE,ERR1    ;REPORT COMPARISON FAILURE TO OPR.
5767  033362  104457                                                          TRAP    C$ERSOFT
5768  033364  000002                                                          .WORD   2
5769  033366  015365                                                          .WORD   EDDDE
5770  033370  017464                                                          .WORD   ERR1
5771  033372  005201                  INC     R1
5772  033374  005203                  INC     R3
5773  033376  005237  006532  CMPS6:  INC     OFSET           ;INC OFFSET
5774  033402  005304                  DEC     R4              ;ELSE DEC CHAR COUNT AND SEE IF 0
5775  033404  001350                  BNE     CMPS1           ;IF NOT GO BACK
5776  033406  005737  006544          TST     TEMP4           ;SEE IF ANY CMP ERRS FOR THIS MSG
5777  033412  001410                  BEQ     CMPS5A          ;BR IF NONE
5778  033414  005237  006506          INC     ERRCNT
5779  033420                          ERRSOFT 3,EDDDE,ERR2    ;REPORT # OF MISMATCHES FOR MESSAGE
5780  033420  104457                                                          TRAP    C$ERSOFT
5781  033422  000003                                                          .WORD   3
5782  033424  015365                                                          .WORD   EDDDE
5783  033426  017526                                                          .WORD   ERR2
5784  033430  004737  020302  CMPS5:  JSR     PC,LOGCMD       ;LOG DATA ERROR IN COMPARE
5785  033434                  CMPS5A:
5786  033434  005337  006474          DEC     DVRCT
5787  033440  001267                  BNE     CMPS3           ;IF NOT ALL DONE GO BACK
5788
```

```
5789                                    .SBTTL          MODEM CHANGE REPORTS
5790
5791                                    ;++
5792                                    ; FUNCTIONAL DESCRIPTION:
5793                                    ;       THIS SECTION REPORTS THE NUMBER OF MOMDEM STATUS CHANGES
5794                                    ;       THAT OCCUR ON EACH PASS. THE ERROR IS ONLY REPORTED IF
5795                                    ;       THERE WERE ANY CHANGES IN OTHER WORDS A COUNT OF ZERO IS
5796                                    ;       NOT REPORTED. THE CHANGES ARE REPORTED IN TWO CLASSES ..
5797                                    ;       HARD ERRORS AND GLITCHES. HARD ERRORS ARE WHEN THE DEVICE
5798                                    ;       IS ABLE TO LATCH UP THE BAD MODEM STATUS. GLITCHES OCCUR
5799                                    ;       WHEN THE MODEM STATUS CHANGES TO CAUSE A DATA SET CHANGE
5800                                    ;       INTERRUPT BUT THE CHANGE DOES NOT OCCUR LONG ENOUGH FOR
5801                                    ;       THE DEVICE TO LATCH THE DATA
5802                                    ;
5803                                    ; INPUTS:
5804                                    ;       'MGLCNT'        - CONTAINS NUMBER OF GLITCH ERRORS
5805                                    ;       'MHRCNT'        - CONTAINS NUMBER OF HARD ERRORS
5806                                    ;
5807                                    ; OUTPUTS:
5808                                    ;       'MGLCNT'        -ZEROED BY THIS SECTION
5809                                    ;       'MHRCNT'        -ZEROED BY THIS SECTION
5810                                    ;
5811                                    ;;
5812                                    ;;--
5813
5814  033442  005737  011516           CMPSEX: TST     MGLCNT          ;CHECK FOR ANY GLITCH ERRORS
5815  033446  001003                           BNE     MCREP           ;IF NON ZERO REPORT THEM
5816  033450  005737  011520                   TST     MHRCNT          ;CHECK FOR ANY HARD ERRORS
5817  033454  001412                           BEQ     ENDPS           ;IF NONE GO TO END OF PASS
5818                                           ;
5819                                           ;REPORT ANY MODEM ERRORS HERE
5820                                           ;
5821  033456  005237  006506           MCREP:  INC     ERRCNT          ;BUMP ERROR COUNT
5822  033462                                   ERRSOF  4,MSCMS,ERR4
5823  033462  104457                                                                  TRAP    C$ERSOFT
5824  033464  000004                                                                  .WORD   .
5825  033466  014764                                                                  .WORD   MSCMS
5826  033470  017604                                                                  .WORD   ERR4
5827  033472  005037  011516                   CLR     MGLCNT          ;CLEAR GLITCH COUNT
5828  033476  005037  011520                   CLR     MHRCNT          ;CLEAR THE HARD COUNT
5829
```

```
                                .SBTTL          INTERNAL END OF PASS CODE


                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       THIS CODE INCREMENTS THE PASS COUNT FOR THE
                                ;       EVENT LOG. LOGS THE END OF PASS EVENT
                                ;       IF 'RPASS" IS A MINUS ONE RETURN TO MODE
                                ;       DISPATCHER. IF NOT -1 THEN DECREMENT RPASS
                                ;       AND IF "RPASS" IS THEN = TO 0 GO TO DCLT PROMT
                                ;       IN NOT = TO 0 THEN GO BACK TO MODE DISPATCHER
                                ;
                                ; SUBORDINATE RCUTINES USED:
                                ;
                                ;               'LOGEOP" - LOG END OF PASS TO EVENT LOG
                                ;------

033502  005237  006504          ENDPS:  INC     PSCNT           ;BUMP PASS COUNT

033506  013737  006502  006544          MOV     OPVAR,TEMP4
033514  013737  006504  006540          MOV     PSCNT,TEMP2
033522  013737  006506  006542          MOV     ERRCNT,TEMP3
033530  004737  020320                  JSR     PC,LOGEOP       ;LOG END OF PASS

033534  022737  177777  006600          CMP     #-1,RPASS       ;SEE IF RPASS=-1
033542  001403                          BEQ     1$              ;IF IT IS DON'T DECRMNT, LOOP FOREVER
033544  005337  006600                  DEC     RPASS           ;DEC PASS COUNT
033550  001402                          BEQ     2$              ;IF DONE EXIT TEST
033552  000137  032142          1$:     JMP     GTRX2           ;ELSE GO BACK AND DISPATCH
033556  042777  000120  155664  2$:     BIC     #RINTEN!RXENA,@RXCSR    ;TURN OFF RX
033564  000137  026644                  JMP     GTRA5           ;WHEN RPASS=0 GO BACK TO "DCLT>"
```

```
 CZDCLB DUP-11 DATA COMM. LINK TEST     MACY11 30A(1052)  20-JUL-83  13:19  PAGE 145
CZDCLB.P11    19-JUL-83 17:12                  DOWN-LINE-LOAD SECTION

  5862                                  .SBTTL          DOWN-LINE-LOAD SECTION
  5863                                  ;++
  5864                                  ; FUNCTIONAL DESCRIPTION:
  5865                                  ;       DOWN LINE LOAD IS NOT SUPPORTED BY THIS DEVICE..
  5866                                  ;       IF THIS MODE IS CALLED BY THE COMMAND LINE INTERPRETER
  5867                                  ;       THEN A MESSAGE WILL BE PRINTED ....THAT SAYS DOWN LINE
  5868                                  ;       LOAD IS NOT!! SUPPORTED BY THIS DEVICE.
  5869                                  ;--
  5870
  5871
  5872
  5873  033570                          DLL:
  5874  033570                                  PRINTF  #DLLCM
  5875  033570  012746  014130                                          MOV     #DLLCM,-(SP)
  5876  033574  012746  000001                                          MOV     #1,-(SP)
  5877  033600  010600                                                  MOV     SP,R0
  5878  033602  104417                                                  TRAP    C$PNTF
  5879  033604  062706  000004                                          ADD     #4,SP
  5880  033610  000137  026644                  JMP     GTRA5
  5881
```

```
 CZDCLB DUP-11 DATA COMM. LINK TEST     MACY11 30A(1052)  20-JUL-83  13:19  PAGE 146
CZDCLB.P11    19-JUL-83 17:12                TALK MODE SECTION

  5882                                  .SBTTL          TALK MODE SECTION
  5883
  5884                                  ;++
  5885                                  ; FUNCTIONAL DESCRIPTION:
  5886                                  ;       TALK MODE SECTION
  5887                                  ;       IN THIS MODE, THE "TALK" END OF THE LINK TRANSMITS OPERATOR
  5888                                  ;       SPECIFIED MESSAGES UNTIL A "EXIT" MESSAGE IS TYPE.  AT THAT POINT,
  5889                                  ;       THIS END OF THE LINK GOES INTO "LISTEN" MODE.
  5890                                  ;
  5891                                  ; SUBORDINATE ROUTINES USED:
  5892                                  ;
  5893                                  ;               "LOGTXQ" - LOG TX BUFFER QUED TO EVENT LOG
  5894                                  ;               "DVTXRX" - QUE TX BUFFER TO DEVICE AND WAIT FOR COMPLETE
  5895                                  ;               "LOGTXC" - LOG TX COMPLETE TO EVENT LOG
  5896                                  ;
  5897                                  ; CALLING SEQUENCE:
  5898                                  ;       JMP     @MODE(R2)       ;DISPATCH TO MODE BASED ON MODE TYPE IN R2
  5899                                  ;--
  5900
  5901  033614                          TALCK:
  5902  033614  042737  000002  006576         BIC     #DATCKB,PARAM   ;SET NOCHECK
  5903  033622  012702  002520                 MOV     #OPBUF,R2
  5904  033626  012722  177777         1$:     MOV     #-1,(R2)+       ;CLEAR OUT OPBUFFER FIRST
  5905  033632  022702  002642                 CMP     #OPEND,R2
  5906  033636  001373                         BNE     1$
  5907  033640                                 GMANID  OPRMM,OPBUF,A,-1,1,72.,NO       ;GET TALK MESSAGE
  5908  033640  104443                                                                 TRAP    C$GMAN
  5909  033642  000406                                                                 BR      10001$
  5910  033644  002520                                                                 .WORD   OPBUF
  5911  033646  000142                                                                 .WORD   T$CODE
  5912  033650  014065                                                                 .WORD   OPRMM
  5913  033652  177777                                                                 .WORD   -1
  5914  033654  000001                                                                 .WORD   T$LOLIM
  5915  033656  000110                                                                 .WORD   T$HILIM
  5916  033660                                                                 10001$:
  5917  033660  005002                         CLR     R2              ;NOW GET CHAR COUNT
  5918  033662  122762  000377  002520  2$:     CMPB    #377,OPBUF(R2)
  5919  033670  001402                         BEQ     3$
  5920  033672  005202                         INC     R2
  5921  033674  000772                         BR      2$
  5922  033676  010237  002166          3$:    MOV     R2,OPCNT
  5923
  5924  033702  012737  002520  006454         MOV     #OPBUF,DVTXA    ;SET UP TX ADDR.
  5925  033710  012737  002520  006540         MOV     #OPBUF,TEMP2
  5926  033716  013737  002166  006542         MOV     OPCNT,TEMP3
  5927  033724  013737  002166  006456         MOV     OPCNT,DVTCC     ;SET UP TX CC
  5928  033732  004737  020100                 JSR     PC,LOGTXQ
  5929  033736  052737  000210  006602         BIS     #QTX+#ETX,FLAG  ;SET UP FLAGS
  5930  033744  005037  006522                 CLR     CPTRR           ;CLEAR RX POINTER
  5931
  5932                                  ;;THIS CODE ADDED FOR PROTOCOL
  5933  033750  032737  000040  006576         BIT     #PROTOB,PARAM   ;'/PROTOCOL'?
  5934  033756  001003                         BNE     20$             ;YES,BRANCH
  5935  033760  004737  035272                 JSR     PC,DVTXRX
  5936  033764  000405                         BR      25$             ;JUMP AROUND PROTOCOL
  5937  033766  042737  000004  006602  20$:    BIC     #RXQ,FLAG       ;MAKE SURE NOT TO RECEIVE
```

```
 5938  033774  004737  040706                  CALL    PROTOCOL        ;DO DDCMP PROTOCOL
 5939
 5940  034000  013737  006454  006540  25$:    MOV     DVTXA,TEMP2
 5941  034006  013737  006456  006542          MOV     DVTCC,TEMP3
 5942  034014  004737  020116                  JSR     PC,LOGTXC
 5943  034020  022737  054105  002520          CMP     #'EX,OPBUF      ;CHECK FOR EXIT
 5944  034026  001272                          BNE     TALCK
 5945  034030  022737  052111  002522          CMP     #''IT,OPBUF+2
 5946  034036  001266                          BNE     TALCK
 5947  034040  042737  000210  006602          BIC     #QTX+#ETX,FLAG  ;CLEAR THE TX BITS
 5948  034046  012737  000006  006570          MOV     #LIS,MODTYP     ;CHANGE TO LISTEN MODE
 5949  034054  000137  032142                  JMP     GTRX2           ;AND GO BACK TO DISPATCH
```

```
                        .SBTTL          LISTEN MODE SECTION

                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       LISTEN MODE SECTION
                        ;       IN THIS MODE, THE "LISTEN" END OF THE LINK PRINTS ALL OF THE MESSAGES
                        ;       RECEIVED BY THE DEVICE ON THE OPERATOR'S CONSOLE.  IF THE MESSAGE
                        ;       RECEIVED IS AN "EXIT" MESSAGE, THEN THE NODE ENTERS "TALK" MODE.
                        ;
                        ; SUBORDINATE ROUTINES USED:
                        ;
                        ;               "DVRXQ" - QUE RECEIVE BUFFER SPACE TO DEVICE
                        ;              "LOGRXQ" - LOG RECEIVE BUFFER QUED TO EVENT LOG
                        ;              "DVTXRX" - WAIT FOR RX TO COMPLETE
                        ;              "LOGRXC" - LOG RX COMPLETE TO EVENT LOG
                        ;
                        ; CALLING SEQUENCE:
                        ;       JMP     @MODE(R2)       ;DISPATCH TO MODE BASED ON MODE TYPE IN R2
                        ;--

034060  042737  000002  006576  LISCK:  BIC     #DATCKB,PARAM   ;CLEAR CHECK BIT
034066                          LISCKA: PRINTF  #LISP           ;PRINT PROMPT FOR OPR.
034066  012746  014054                                                  MOV     #LISP,-(SP)
034072  012746  000001                                                  MOV     #1,-(SP)
034076  010600                                                          MOV     SP,R0
034100  104417                                                          TRAP    C$PNTF
034102  062706  000004                                                  ADD     #4,SP
034106  012737  002520  006470          MOV     #OPBUF,DVRXA    ;SET DEVICE UP TO REC AT OPBUF
034114  012737  002520  006540          MOV     #OPBUF,TEMP2
034122  012737  000122  006472          MOV     #82.,DVRCC      ;SET UP CHAR COUNT TO 82.
034130  012737  000122  006542          MOV     #82.,TEMP3
034136  052737  000104  006602          BIS     #QRX+#ERX,FLAG  ;SET UP FLAG
034144  005037  006524                  CLR     CPTR            ;CLEAR THE TX.

                        ;; WAS PROTOCOL SELECTED ?
034150  032737  000040  006576          BIT     #PROTOB,PARAM   ;'/PROTOCOL' ?
034156  001007                          BNE     20$             ;YES,BRANCH

034160  004737  035170                  JSR     PC,DVRXQ        ;QUE RX
034164  004737  020134                  JSR     PC,LOGRXQ
034170  004737  035272                  JSR     PC,DVTXRX       ;GO TO DEVICE RX. SUBROUTINE
034174  000402                          BR      25$
034176  004737  040706          20$:    CALL    PROTOC          ;DO DDCMP PROTOCOL
034202  013737  006470  006540  25$:    MOV     DVRXA,TEMP2
034210  013737  006472  006542          MOV     DVRCC,TEMP3     ;SET UP ADDR.AND CC.
034216  004737  020152                  JSR     PC,LOGRXC       ;LOG COMPLETED
034222  063737  006470  006472          ADD     DVRXA,DVRCC
034230  105077  152236                  CLRB    @DVRCC
034234                          OPBFPT: PRINTF  #OPBFPT
034234  012746  002514                                                  MOV     #OPBFPT,-(SP)
034240  012746  000001                                                  MOV     #1,-(SP)
034244  010600                                                          MOV     SP,R0
034246  104417                                                          TRAP    C$PNTF
034250  062706  000004                                                  ADD     #4,SP
034254  022737  054105  002520          CMP     #'EX,OPBUF      ;COMPARE FOR EX OF 'EXIT'
034262  001311                          BNE     LISCKA          ;IF NOT EXIT THEN GO BACK
```

```
 6006  034264  022737  052111  002522          CMP     #''IT,OPBUF+2    ;IF FIRST HALF OK CHECK NEXT PART
 6007  034272  001305                          BNE     LISCKA           ;IF NOT EXIT THE GO BACK
 6008  034274  012737  000005  006570          MOV     #TAL,MODTYP      ;CHANGE MODE TO TALK
 6009  034302  000137  032142                  JMP     GTRX2            ;RETURN TO DISPATCHER
 6010
 6011
```

```
                        .SBTTL          DEVICE FUNCTION SUBROUTINES
                        .SBTTL                  DEVICE INIT SUBROUTINE

                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       DVINIT- DEVICE INIT ROUTINE
                        ;       THIS ROUTINE IS DEVICE DEPENDENT CODE THAT INITS
                        ;       THE DEVICE BEING TESTED.
                        ;       IT SETS THE DEVICE UP TO THE MODE IT IS TO RUN IN AND
                        ;       INITIATES THE START,STACK,ACK SEQUENCE IF THE 'RNODE''(REMOTE
                        ;       NODE)INPUT INDICATES THE REMOTE NODE IS NON-ITEP.
                        ;
                        ; INPUTS:       'FHDPLX'' INDICATES IF MODE IS FULL OR HALF DUPLEX. (1=FULL)
                        ;               ADDRESS POINTERS (SEL0,...) ALREADY POINT TO DEVICE'S REG.S
                        ;
                        ;               'MLTYP'' INDICATES THE LOOP TYPE (1=TTL,2=CAB,3=RM,4=LM)
                        ;               'RNODE'' INDICATES THE TYPE OF REMOTE NODE (ITEP=1,NON-ITEP=0)
                        ;
                        ; SUBORDINATE ROUTINES USED:
                        ;
                        ;               ''CTSSR'' - CLEAR TO SEND SUB ROUTINE
                        ;               'DVIN31'' - SEND CONTROL AND REC OR TIME OUT
                        ;               ''CLRRTS'' - CLEAR REQUEST TO SEND ROUTINE
                        ;                'LGDVE'' - LOG DEVICE ERROR TO EVENT LOG
                        ;
                        ; CALLING SEQUENCE:
                        ;               JSR     PC,DVINIT
                        ;--
                        DVINIT:
                        ;; DO MASTER CLEAR
034306 012777 000400 155142 20$:    MOV     #RESET,@TXCSR   ;DO A MASTER CLEAR
034314 000240                       NOP                     ;WAIT A WHILE FOR
034316 000240                       NOP                     ;;IT TO CLEAR
034320 012777 000400 155130         MOV     #RESET,@TXCSR   ;DO A CLEAR AGAIN(NECESSARY WITH LOOP=CABLE)
034326 117737 155116 006542         MOVB    @RXCSR,TEMP3    ;SEE IF IT WORKED
034334 001423                       BEQ     DVIN1           ;BRANCH IF OK
034336                              BREAK
034336 104422                                                                       TRAP    C$BRK

                                    ;REPORT ERROR IF RESET
                                    ;DOES NOT WORK

034340 012737 016747 006540         MOV     #DVEM0,TEMP2
034346 017737 155076 006542         MOV     @RXCSR,TEMP3
034354 017737 155076 006544         MOV     @TXCSR,TEMP4    ;LOAD UP ERRM. AND REG OUTPUTS
034362 004737 020162                JSR     PC,LGDVE        ;LOG TIME OUT WAITING FOR RUN
034366 005237 006506                INC     ERRCNT
034372                              ERRSOFT 5,DVEM0,ERR13
034372 104457                                                                       TRAP    C$ERSOFT
```

```
6068  034374  000005                                                          .WORD   5
6069  034376  016747                                                          .WORD   DVEM0
6070  034400  017636                                                          .WORD   ERR13
6071  034402  000741                  BR DVINIT               ;GO BACK AND TRY MSTR CLR AGAIN IF ERROR
6072
6073                                  ;SET TTL LOOP IF REQU'D
6074
6075  034404  042737  000003  006602  DVIN1:  BIC     #3,FLAG         ;CLEAR INPUT AND OUTPUT INT FLAGS
6076  034412  042777  004000  155036          BIC     #TTLL,@TXCSR    ;CLEAR INTERNAL LOOP
6077  034420  022737  000001  006572          CMP     #TTL,MLTYP      ;IS TTL SELECTED
6078  034426  001004                          BNE     DVIN3           ; IF NOT GO TO 3
6079  034430  052777  004000  155020          BIS     #TTLL,@TXCSR    ;ELSE SET INTERNAL LOOP
6080  034436  000461                          BR      DVIN37
6081
6082  034440  022737  000002  006572  DVIN3:  CMP     #CABLE,MLTYP    ;CABLE LOOP ?
6083  034446  001004                          BNE     10$             ;NO,BRANCH
6084  034450  052777  010000  155000          BIS     #CABLOP,@TXCSR  ;SET EXTERNAL LOOP (TURN AROUND CONNECTOR)
6085  034456  000451                          BR      DVIN37          ;
6086
6087  034460  022737  000004  006570  10$:    CMP     #DOW,MODTYP     ;CHECK IF DLL
6088  034466  001002                          BNE     DVIN3A          ;BRANCH IF NOT DLL
6089  034470  000137  035130                  JMP     DVINEX          ;ELSE EXIT
6090
6091  034474  012777  000002  154746  DVIN3A: MOV     #DTR,@RXCSR     ;SET UP DTR.
6092
6093  034502  012737  002000  006642          MOV     #2000,TIMER1
6094  034510  005737  006642  DVIN38: TST     TIMER1
6095  034514  001022                          BNE     DVIN39          ;IF TIMER NOT OUT GO TO 39
6096
6097                                  ;SET ERROR FOR NO MODEM READY
6098
6099  034516  012737  017377  006540          MOV     #DVEM6,TEMP2
6100  034524  017737  154720  006542          MOV     @RXCSR,TEMP3
6101  034532  017737  154720  006544          MOV     @TXCSR,TEMP4
6102  034540  004737  020162                  JSR     PC,LGDVE
6103  034544  005237  006506                  INC     ERRCNT
6104  034550                                  ERRSOFT 11,DVEM6,ERR13
6105  034550  104457                                                          TRAP    C$ERSOFT
6106  034552  000013                                                          .WORD   11
6107  034554  017377                                                          .WORD   DVEM6
6108  034556  017636                                                          .WORD   ERR13
6109  034560  000745                          BR      DVIN3A          ;THEN TRY TO SET DTR AGAIN
6110  034562                          DVIN39: BREAK
6111  034562  104422                                                          TRAP    C$BRK
6112  034564  017737  154660  011474          MOV     @RXCSR,IRXCSR   ;GET COPY OF RXCSR
6113  034572  032737  001000  011474          BIT     #BIT9,IRXCSR    ;IS MODEM READY SET
6114  034600  001743                          BEQ     DVIN38
6115  034602  013777  011470  154642  DVIN37: MOV     DUPPAR,@PARCSR  ;SET PARAMETER REGISTER
6116  034610  005737  011522                  TST     RNODE           ;REMOTE ITEP ?
6117  034614  001145                          BNE     DVINEX          ;YES,BRANCH
6118  034616  005737  006574                  TST     FHDPLX          ;FULL DUPLEX ?
6119  034622  001542                          BEQ     DVINEX          ;NO,BRANCH
6120  034624  032737  000040  006576          BIT     #PROTOB,PARAM   ;'/PROTOCOL' ?
6121  034632  001136                          BNE     DVINEX          ;YES,BRANCH
6122
6123                                  ;; THIS START-STACK ROUTINE USED IN NON-PROTOCOL,NON-ITEP,FULL DUPLEX MODE
```

```
 6124
 6125                                          ;SET UP TO SEND STRT
 6126  034634  112737  000005  002645          MOVB    #5,HDMSG+1      ;SET UP ENQ
 6127  034642  052737  000060  006602          BIS     #RXM!TXM,FLAG   ;SET FLAG WORD
 6128  034650  012737  000074  006646          MOV     #60.,TIMERS     ;SET TIMER FOR 1 MINUTE
 6129  034656  004737  036576                  JSR     PC,CTSSR        ;SET CTS IF NESC.
 6130  034662  012737  000006  002646  DVIN41: MOV     #6,HDMCC        ;SET UP STRT CODE
 6131  034670  004737  036432                  JSR     PC,DVIN31       ;GO TX STRT AND CHK FOR RX.
 6132  034674  005737  006646                  TST     TIMERS
 6133  034700  001466                          BEQ     DVIN81          ;IF TIMER EXPIERED EXIT
 6134
 6135  034702  022737  000006  002660  DVIN4:  CMP     #6,RHDMCC       ;IS THE RCVD=STRT
 6136  034710  001441                          BEQ     DVIN8           ;IF SO GO TO ASTRT
 6137  034712  022737  000007  002660          CMP     #7,RHDMCC       ;IS IT A STACK
 6138  034720  001360                          BNE     DVIN41          ;IF NOT STACK ETIHER GO BACK
 6139
 6140  034722  004737  036576  DVIN9:  JSR     PC,CTSSR        ;SET REQUEST TO SEND
 6141  034726  042737  001010  006602          BIC     #QTX!PAD,FLAG   ;CLEAR TX COMPT FLAG.
 6142  034734  012737  000001  002646          MOV     #1,HDMCC        ;SET UP ACK
 6143  034742  012737  002645  011500          MOV     #HDMSG+1,MSGPTR ;SET UP POINTER
 6144  034750  013737  002654  011502          MOV     HDMC,MSGCC
 6145  034756  012737  000010  011504          MOV     #8.,SYNCC       ;SET UP SYNC COUNT
 6146  034764  052777  000120  154464          BIS     #SEND!TINTEN,@TXCSR ;TURN ON TX, ENABLE TX INTERRUPT
 6147  034772  032737  000010  006602  DIVN91: BIT     #QTX,FLAG
 6148  035000  001053                          BNE     DVINEX          ;EXIT IF ACK SENT
 6149  035002                                  BREAK
 6150  035002  104422                                                          TRAP    C$BRK
 6151  035004  005737  006646                  TST     TIMERS
 6152  035010  001370                          BNE     DIVN91          ;IF NOT TIMER EXPIRED RECHK TX.
 6153  035012  000421                          BR      DVIN81          ;IF TIMER OUT REPORT IT
 6154
 6155  035014  012737  000007  002646  DVIN8:  MOV     #7,HDMCC        ;SET POTINTER TO STACK
 6156  035022  004737  036432                  JSR     PC,DVIN31               ;AND GO SEND STACK
 6157  035026  005737  006646                  TST     TIMERS
 6158  035032  001411                          BEQ     DVIN81          ;REPORT ERROR IF TIME OUT
 6159  035034  022737  000001  002660          CMP     #1,RHDMCC       ;IS IT ACK RCVD?
 6160  035042  001432                          BEQ     DVINEX          ;IF SO EXIT
 6161  035044  022737  000007  002660          CMP     #7,RHDMCC       ;IS IT STACK RCVD
 6162  035052  001723                          BEQ     DVIN9           ;IF SO SEND ACK
 6163  035054  000757                          BR      DVIN8           ;IF NEITHER SEND ANOTHER ACK
 6164
 6165                                          ;DO ERROR AND REPEAT
 6166
 6167  035056  012737  017313  006540  DVIN81: MOV     #DVEM5,TEMP2
 6168  035064  013737  002660  006542          MOV     RHDMCC,TEMP3
 6169  035072  013737  002646  006544          MOV     HDMCC,TEMP4     ;LOAD UP ERRM. AND REG OUTPUTS
 6170  035100  004737  020162                  JSR     PC,LGDVE        ;LOG TIME OUT WAITING FOR RUN
 6171  035104  005237  006506                  INC     ERRCNT
 6172  035110                                  ERRSOFT 10.,DVEM5,ERR13
 6173  035110  104457                                                          TRAP    C$ERSOFT
 6174  035112  000012                                                          .WORD   10
 6175  035114  017313                                                          .WORD   DVEM5
 6176  035116  017636                                                          .WORD   ERR13
 6177  035120  005237  006502                  INC     OPVAR           ;COUNT HOW MANY TIMES WE DO THIS.
 6178  035124  000137  034306                  JMP     DVINIT          ;TRY ALL OVER AGAIN
 6179
```

```
 6180  035130  004737  037010          DVINEX: JSR     PC,CLRRTS       ;CLEAR RTS IF NESC
 6181  035134  042737  173777  006602          BIC     #173777,FLAG    ;CLEAR FLAG WORD
 6182  035142  052737  002000  006602          BIS     #INOVR,FLAG     ;SET THE INITT OVER FLAG
 6183  035150  000207                          RTS     PC              ;RETURN TO CALLER
 6184
 6185
```

```
                                .SBTTL                  DEVICE GET MODEM STATUS SUBROUTINE
                                ;++
                                ; FUNCTIONAL DESCRIPTION:
                                ;       'DVMODS''   GET MODEM STATUS
                                ;
                                ; IMPLICIT INPUTS:
                                ;       THE BIT POSITION AND AVAILABILITY OF THE MODEM SIGNALS CTS,DSR,...RI,..
                                ;       FOUND IN THE DEPENDENT PORTION OF THE GLOBAL EQUATES SECTION.
                                ;
                                ; OUTPUTS:
                                ;       CURRENT MODEM SIGNAL VALUES IN 'MODS''
                                ;
                                ; CALLING SEQUENCE:
                                ;       JSR     PC,DVMODS
                                ;--
035152  017737  154272  007556  DVMODS: MOV     @RXCSR,MODS     ;READ MODEM STATUS

035160  042737  104761  007556  DVMEX:  BIC     #104761,MODS    ;CLEAR BITS NOT RELATING TO MODEM
035166  000207                          RTS     PC              ;RETURN TO CALLER
```

```
                        .SBTTL                  DEVICE QUEUE RECEIVE SPACE SUBROUTINE

                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       DVRXQ - THIS SUBROUTINE QUEUES THE RECIEVER BUFFER SPACE TO THE
                        ;               DEVICE, THEN CLEARS THE QRX BIT OF THE FLAG WORD.
                        ;
                        ; INPUTS:
                        ;       DVRXA = ADDRESS OF RX BUFFER SPACE
                        ;       DVRCC = BYTE CHAR COUNT OF RX BUFFER
                        ;       QRX FLAG BIT = SET BY CALLING ROUTINE
                        ;
                        ; OUTPUTS:
                        ;       QRX FLAG BIT = CLEARED BY ROUTINE
                        ;
                        ; CALLING SEQUENCE:
                        ;       JSR     PC,DVRXQ
                        ;--

035170                  DVRXQ:
035170  032737  000004  006602          BIT     #QRX,FLAG               ;ARE WE RECEIVING ?
035176  001434                          BEQ     DVREX                   ;NO,BRANCH
035200  042737  000444  006602          BIC     #QRX+#BCC+#RXM,FLAG     ;CLEAR FLAG FOR RX
035206  005737  011522                  TST     RNODE                   ;ITEP MODE ?
035212  001415                          BEQ     DVRX2                   ;NO,BRANCH
035214  052737  000440  006602          BIS     #RXM+#BCC,FLAG          ;GET JUST THE DATA NO CRC.
035222  013737  006470  011510          MOV     DVRXA,RMSGPT            ;RECEIVE DATA BUFFER ADDRESS
035230  012737  000072  011512          MOV     #72,RMSGCC              ;SET UP RX TO GET ITEP MSG.
035236  012737  000070  006472          MOV     #70,DVRCC
035244  000406                          BR      DVRX3

                                        ;ENABLE RX, RX INTERRUPTS,AND DATA SET INTERRUPTS

035246  012737  002657  011510  DVRX2:  MOV     #RHDMSG+1,RMSGPT        ;SETUP RX BUFFER ADDRESS
035254  013737  002654  011512          MOV     HDMC,RMSGCC             ;SETUP CHARACTER COUNT
035262  052777  000560  154160  DVRX3:  BIS     #RINTEN!RXENA!#DSITEN!#STRIP,@RXCSR  ;ENABLE RECEIVER
035270  000207                  DVREX:  RTS     PC                      ;RETURN TO CALLER
```

```
                        .SBTTL                  DEVICE TRANSMIT AND RECEIVE SUBROUTINE


                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       DVTXRX-DEVICE TRANSMIT AND RECEIVE ROUTINE
                        ;       THIS CODE QUES THE TRANSMIT BUFFER TO THE DEVICE
                        ;       IF NEEDED. THE CODE THEN WAITS FOR A TX COMPLE,
                        ;       RX COMPLETE OR BOTH. THE CODE REPORTS A TIME OUT
                        ;       ERROR IF NO  OUTPUT INTERRUPT IS RECIEVED BEFORE
                        ;       60 SECONDS. AFTER REPORTING ERROR TIMER IS RE STARTED
                        ;       AND DEVICE WILL CONTINUE TO WAIT FOR INTERRUPT.
                        ;
                        ;INPUTS:
                        ;       'DVTXA' = ADDRESS OF TRANSMIT MSG.
                        ;       'DVTCC' = BYTE COUNT OF TRANSMIT MSG.
                        ;    'QTX' BIT  = SET IF TRANSMIT REQUESTED
                        ;    'ETX' BIT  = SET IF TRNASMIT EXPECTED
                        ;    'ERX' BIT  = SET IF RECIEVE EXPECTED
                        ;
                        ;OUTPUTS:
                        ;       'DVTXA' = ADDRESS OF TX MSG. COMPLETED
                        ;       'DVTCC' = BYTE COUNT OF TX MSG. COMPLETED
                        ;       'QTX'   = SET IF TX COMPLETED
                        ;       'DVRXA' = ADDRESS OF RX MSG. COMPLETED
                        ;       'DVRCC' = BYTE COUNT OF RX MSG. COMPLETED
                        ;       'QRX'   = SET IF RX COMPLETED
                        ;
                        ;
                        ; SUBORDINATE ROUTINES USED:
                        ;
                        ;               'LGDVE'  - LOG DEVICE ERROR TO EVENT LOG
                        ;
                        ; CALLING SEQUENCE:
                        ;       JSR     PC,DVTXRX
                        ;--
035272  032737  000010  006602  DVTXRX: BIT     #QTX,FLAG               ;ANY TX TO QUE ?(ARE WE TRANSMITTING?)
035300  001444                          BEQ     DVTR3                   ;NO,BRANCH
035302  042737  001030  006602          BIC     #QTX+#TXM+PAD,FLAG      ;CLEAR FLAG
035310  004737  036576                  JSR     PC,CTSSR                ;GO SET CTS
035314  005737  011522                  TST     RNODE                   ;REMOTE NODE = ITEP ?
035320  001412                          BEQ     DVTR1                   ;NO,BRANCH
035322  052737  000020  006602          BIS     #TXM,FLAG               ;TX ONLY DATA MESSAGE
035330  013737  006454  011500          MOV     DVTXA,MSGPTR            ;MESSAGE ADDRESS
035336  013737  006456  011502          MOV     DVTCC,MSGCC             ;MESSAGE CHAR COUNT
035344  000414                          BR      DVTR2                   ;
                                        ;ENABLE TX AND TX INTER.

035346  112737  000201  002645  DVTR1:  MOVB    #201,HDMSG+1            ;SET UP SOH
035354  012737  002645  011500          MOV     #HDMSG+1,MSGPTR         ;SET POINTER TO HEADER
035362  013737  006456  002646          MOV     DVTCC,HDMCC
035370  013737  002654  011502          MOV     HDMC,MSGCC              ;SET CC FOR HEADER
035376  012737  000177  011504  DVTR2:  MOV     #177,SYNCC              ;SET UP FOR 177 SYNCS.
                                                                        ;(SO MANY SYNCS ARE NECESSARY
                                                                        ;;IF THE OTHER NODE HAS A
```

```
6307                                                        ;;;SLOWER CPU.)
6308
6309  035404  052777  000120  154044          BIS     #SEND!#TINTEN,@TXCSR    ;TURN ON TX
6310
6311  035412  012737  000074  006646  DVTR3:  MOV     #60.,TIMERS             ;SET TIMER FOR 60 SECS
6312
6313  035420                          DVTR8:  BREAK                                           TRAP    C$BRK
6314  035420  104422
6315  035422  005737  006646                  TST     TIMERS                  ;IS TIMER EXPIRED
6316  035426  001022                          BNE     TOINOT
6317
6318                                          ;LOG ERROR TIME OUT RX OR TX NOT COMPLETED
6319
6320  035430  012737  017110  006540          MOV     #DVEM2,TEMP2
6321  035436  017737  154006  006542          MOV     @RXCSR,TEMP3
6322  035444  017737  154006  006544          MOV     @TXCSR,TEMP4
6323  035452  004737  020162                  JSR     PC,LGDVE
6324  035456  005237  006506                  INC     ERRCNT
6325  035462                                  ERRSOFT 7,DVEM2,ERR13
6326  035462  104457                                                          TRAP    C$ERSOFT
6327  035464  000007                                                          .WORD   7
6328  035466  017110                                                          .WORD   DVEM2
6329  035470  017636                                                          .WORD   ERR13
6330  035472  000747                          BR      DVTR3           ;RETURN TO CHECK TIMER
6331
6332  035474  032737  000010  006602  TOINOT: BIT     #QTX,FLAG       ;IS IT TX COMPL?
6333  035502  001406                          BEQ     DVTR4           ;BRANCH IF TX NOT DONE.
6334  035504  004737  037010                  JSR     PC,CLRRTS
6335  035510  032737  000100  006602          BIT     #ERX,FLAG       ;ARE WE EXPECTING TO RX
6336  035516  001416                          BEQ     DVTREX          ;BRANCH IF NOT.
6337
6338  035520  032737  000004  006602  DVTR4:  BIT     #QRX,FLAG       ;IS RX DONE
6339  035526  001734                          BEQ     DVTR8           ;GO BACK AND TIME IF NOT
6340
6341  035530  032737  000200  006602          BIT     #ETX,FLAG       ;ARE WE EXPECTG TO TX.
6342  035536  001406                          BEQ     DVTREX          ;BRANCH IF NOT.
6343
6344  035540  032737  000010  006602          BIT     #QTX,FLAG       ;IS IT TX COMPLETED
6345  035546  001724                          BEQ     DVTR8           ;GO BACK AND TIME OUT
6346  035550  004737  037010                  JSR     PC,CLRRTS       ;CLEAR RTS IF NESC.
6347  035554  000207          DVTREX: RTS     PC                      ;AND EXIT
6348
```

```
                        ; DEVICE DEPENDENT SUBROUTINES



                        .SBTTL                  DEVICE INTERRUPT SERVICE ROUTINES



                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       RECEIVER INTERRUPT ROUTINE. WHEN A RX INT. OCCURS
                        ;       THIS ROUTINE DECIDES IF IT IS A DATA SET
                        ;       CHANGE OR DATA INTERRUPT. IF IT IS A DATA SET CHANGE
                        ;       INTERRUPT IT PUTS THE STATUS IN "CMODS" AND COMPARES
                        ;       THAT STATUS TO THE OLD STATUS IN "MODS". IF THEY ARE
                        ;       THE SAME THAT MEANS THE INTERRUPT WAS CAUSED BY A GLITCH
                        ;       ON ONE OF THE LINES. IF THEY ARE DIFFERENT THEN A HARD
                        ;       MODEM ERROR HAS OCCURED. IN ANY EVENT THE MODEM STATUS
                        ;       CHANGE IS LOGGED.
                        ;       IF A DATA INT. OCCURS THE ROUTINE PUTS THE DATA AWAY
                        ;       IN A BUFFER POINTED TO BY "RMSGPT" THE MSG. COUNT IS
                        ;       DECREMENTED BY ONE BYTE. IF COUNT IS EQUAL TO ZERO AND
                        ;       "BCC" BIT AND "RXM" BIT IS SET THEN RX IS DISABLED AND
                        ;       "QRX" BIT IS SET. IF COUNT IS ZERO AND "BCC" BIT IS SET
                        ;       BUT "RXM" BIT IS NOT SET THEN MSG COUNT IS SET TO LENGHT
                        ;       RECVD IN HEADER AND "RMSGPT" IS SET TO RX BUFFER LOCATION
                        ;       AND "RXM" BIT IS SET.
                        ;       IF COUNT IS EQUAL TO ZERO AND "BCC" IS NOT SET THEN
                        ;       COUNT IS SET TO 2 AND "RMSGPT" IS SET TO "BCCW" AND
                        ;       "BCC" BIT IS SET.
                        ;
                        ;       IF THE OVERRUN ERROR BIT IS SET THEN
                        ;       AN ERROR IS LOGGED AND "QRX" IS SET AND THE RX IS DISABLED.
                        ;
                        ; INPUTS:
                        ;       RMSGPT - ADDRESS OF RX BUFFER
                        ;       RMSCC  - COUNT OF DATA TO BE RXED.
                        ;
                        ; SUBORDINATE ROUTINES USED:
                        ;               "LOGMSC"        - LOG MODEM STATUS CHANGE
                        ;               "LGDVE"         - LOG DEVICE ERROR
                        ;--
                        ;
035556                          BGNSRV  DVRXI
035556                                                                  DVRXI::
035556  010246                  MOV     R2,-(SP)        ;SAVE R2
035560  017737  153664  011474  MOV     @RXCSR,IRXCSR   ;MOV RX CSR TO IMAGE
035566  032737  000010  006576  BIT     #MOCHK,PARAM    ;ANY MODEM CHANGES TO REPORT
035574  001447                  BEQ     RXIN21          ;IF NOT IGNORE DS CHANGE.
035576  032737  002000  006602  BIT     #INOVR,FLAG     ;IS INIT OVER
035604  001443                  BEQ     RXIN21          ;NO THEN IGNORE DS CHANGE.
035606  005737  011474          TST     IRXCSR
035612  100040                  BPL     RXIN21          ;IF DATA SET CHANGE IS NOT SET BR
035614  013737  011474  011472  MOV     IRXCSR,CMODS    ;MOV THE NEW MODEM STATUS IN
035622  042737  104761  011472  BIC     #104761,CMODS   ;CLEAR BITS NOT RELATING TO MODEM STATUS
```

```
 6405  035630  013737  011472  006542  RXIN2:  MOV     CMODS,TEMP3
 6406  035636  013737  007556  006544          MOV     MODS,TEMP4
 6407  035644  023737  006544  006542          CMP     TEMP4,TEMP3     ;COMPARE OLD TO CURRENT
 6408  035652  001406                          BEQ     10$             ;INC GLITCH COUNT
 6409  035654  005237  011520                  INC     MHRCNT          ;INC HARD COUNT
 6410  035660  012737  016717  006540          MOV     #HRDMSG,TEMP2   ;SET UP HARD MESG.
 6411  035666  000405                          BR      RXIN1
 6412  035670  005237  011516          10$:    INC     MGLCNT          ;INC GLITCH COUNT
 6413  035674  012737  016671  006540          MOV     #GLMSG,TEMP2    ;SET UP GLITCH
 6414  035702  004737  020336          RXIN1:  JSR     PC,LOGMSC       ;GO LOG MODEM STATUS CHANGE
 6415  035706  013737  011472  007556          MOV     CMODS,MODS      ;MOVE CURRENT TO OLD
 6416                                          ;
 6417                                          ;TEST FOR DATA
 6418
 6419  035714  032737  000200  011474  RXIN21: BIT     #RXDONE,IRXCSR  ;RX DONE ?
 6420  035722  001540                          BEQ     RXINEX          ;NO,BRANCH
 6421  035724  017737  153524  011476          MOV     @RXDBUF,IRXDBUF ;READ DATA
 6422  035732  032737  100000  011476          BIT     #RERR,IRXDBUF   ;OVERRUN ERROR ?
 6423  035740  001055                          BNE     RXIN3           ;YES,BRANCH
 6424
 6425                                          ;GET HERE WITH GOOD DATA
 6426
 6427  035742  013702  011510  RXIN4:  MOV     RMSGPT,R2       ;SET RX MESSAGE POINTER
 6428  035746  113722  011476          MOVB    IRXDBUF,(R2)+   ;STORE DATA AWAY
 6429  035752  010237  011510          MOV     R2,RMSGPT       ;SAVE UPDATED MESSAGE POINTER
 6430
 6431
 6432  035756  005337  011512          DEC     RMSGCC          ;ALL DATA RECEIVED ?
 6433  035762  001120                  BNE     RXINEX          ;NO,BRANCH
 6434  035764  032737  000400  006602  BIT     #BCC,FLAG       ;CHECK CRC ?
 6435  035772  001426                  BEQ     RXIN6           ;YES,BRANCH
 6436  035774  032737  010000  011476  BIT     #CRCOK,IRXDBUF  ;CRC GOOD ?
 6437  036002  001056                  BNE     RXIN5           ;YES,BRANCH
 6438  036004  013737  011476  006542  MOV     IRXDBUF,TEMP3   ;SET UP TO
 6439  036012  013737  011474  006544  MOV     IRXCSR,TEMP4    ;;LOG AND
 6440  036020  012737  017205  006540  MOV     #DVEM3,TEMP2    ;;;PRINT CRC ERROR
 6441  036026  004737  020162          JSR     PC,LGDVE        ;LOG ERROR
 6442  036032  005237  006506          INC     ERRCNT          ;BUMP COUNT
 6443  036036                          ERRSOFT 8,DVEM3,ERR13   ;PRINT ERROR TO USER
 6444  036036  104457                                                  TRAP    C$ERSOFT
 6445  036040  000010                                                  .WORD   8
 6446  036042  017205                                                  .WORD   DVEM3
 6447  036044  017636                                                  .WORD   ERR13
 6448
 6449  036046  000463                  BR      RXIN8           ;DISABLE INTERRUPTS AND EXIT
 6450
 6451                          ;;;IN ORDER TU CHECK CRC, WE MUST READ 2 MORE CHARACTERS(CRC)
 6452  036050  052737  000400  006602  RXIN6:  BIS     #BCC,FLAG       ;SET CRC ALREADY CHECKED FLAG
 6453  036056  012737  000002  011512          MOV     #2,RMSGCC       ;COUNT TWO CHARACTERS
 6454  036064  012737  011514  011510          MOV     #BCCW,RMSGPT    ;CRC STORAGE ADDRESS
 6455  036072  000454                          BR      RXINEX          ;EXIT
 6456
 6457
 6458  036074                  RXIN3:  ;LOG OVERRUN ERROR
 6459
 6460  036074  012737  017246  006540          MOV     #DVEM4,TEMP2
```

```
 6461  036102  013737  011476  006542          MOV     IRXDBUF,TEMP3
 6462  036110  013737  011474  006544          MOV     IRXCSR,TEMP4
 6463  036116  004737  020162                  JSR     PC,LGDVE
 6464  036122  005237  006506                  INC     ERRCNT
 6465  036126                                  ERRSOFT 9,DVEM4,ERR13
 6466  036126  104457                                                          TRAP    C$ERSOFT
 6467  036130  000011                                                          .WORD   9
 6468  036132  017246                                                          .WORD   DVEM4
 6469  036134  017636                                                          .WORD   ERR13
 6470  036136  000424                          BR      RXIN7
 6471
 6472  036140  032737  000040  006602  RXIN5:  BIT     #RXM,FLAG       ;IS THE RX M BODY BIT SET
 6473  036146  001020                          BNE     RXIN7           ;IF YES THEN ALL DONE
 6474  036150  052737  000040  006602          BIS     #RXM,FLAG
 6475  036156  042737  000400  006602          BIC     #BCC,FLAG       ;CLEAR BCC AND SET RXM
 6476  036164  013737  006470  011510          MOV     DVRXA,RMSGPT    ;MOVE ADDRESS TO POINTER
 6477  036172  013737  002660  011512          MOV     RHDMCC,RMSGCC   ;MOVE THE CHAR COUNT IN
 6478  036200  013737  002660  006472          MOV     RHDMCC,DVRCC    ;SET THE CC TO AMOUNT IN HEADER
 6479  036206  000406                          BR      RXINEX          ;AND FINISH.
 6480
 6481  036210  052737  000004  006602  RXIN7:  BIS     #QRX,FLAG       ;SET MESSAGE RECEIVED IN FLAG
 6482
 6483  036216  042777  000120  153224  RXIN8:  BIC     #RINTEN+RXENA,@RXCSR    ;CLEAR INTAND RX ENABLE
 6484
 6485  036224  012602                  RXINEX: MOV     (SP)+,R2        ;RESTORE R2
 6486  036226                                  ENDSRV
 6487  036226                                                                  L10020:
 6488  036226  000002                                                          RTI
```

```
                        .SBTTL                  DEVICE TRANSMIT INTERRUPT ROUTINE

                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       DEVICE TRANSMIT INT. ROUTINE
                        ;
                        ;       WHEN A TRANSMIT BUFFER EMPTY CAUSES AN INTERRUPT TO OCCUR
                        ;       THE PROGRAM COMES TO THIS ROUTINE.
                        ;       IF THE SYNC COUNT"SYNCC" IS NON ZERO TSOM IS SET
                        ;       A SYNC CHAR IS LOADED TO TXDBUF AND THE SYNC COUNT IS
                        ;       DECREMENTED.
                        ;
                        ;       IF THE SYNC COUNT IS ZERO TSOM AND TEOM ARE RESET
                        ;       AND THE "PAD" BIT IN FLAG WORD IS CHECKED IF IT IS
                        ;       SET THEN A PAD(377) CHAR IS LOADED TO TXDBUF AND TX
                        ;       INTERRUPT ENABLE IS CLEARD.
                        ;
                        ;       IF THE SYNC COUNT IS ZERO AND THE "PAD" FLAG IS
                        ;       CLEAR THEN A BYTE IS PUT IN TXDBUF FROM THE ADDRESS
                        ;       IN MSGPTR AND THE MSG COUNT IS DECREMENTED
                        ;
                        ;       IF THE MSG COUNT GOES TO ZERO THE "TXM" BIT IS
                        ;       CHECKED IF IT  IS SET THE "PAD" FLAG IS SET
                        ;       IF IT IS CLEAR THEN IT GETS SET AND MSGPTR IS
                        ;       LOADED WITH THE ADDRESS OF TXBUFF AND THE MSG
                        ;       COUNT IS LOADED WITH THE COUNT OF THE MSG TO
                        ;       BE TRANSMITTED.
                        ;
                        ; INPUTS:
                        ;       MSGPTR - IS SET TO THE ADDRESS OF THE MSG OR HEADER TO BE TX'D
                        ;       MSGCC  - IS SET TO THE COUNT OF MSG TO BE TX'D
                        ; OUTPUTS:
                        ;       QTX - THIS BIT IS SET WHEN MSG IS TX'D OK.
                        ;--

 036230                                 BGNSRV  DVTXI
 036230                                                                 DVTXI::
 036230  010246                        MOV     R2,-(SP)        ;SAVE R2
 036232  005737  011504                 TST     SYNCC           ;ANY SYNCS TO SEND
 036236  001406                        BEQ     TXIN1           ;IF NOT GO TO 1
 036240  013777  011506  153212         MOV     SYNCW,@TXDBUF   ;ELSE SET TSOM AND SYNC WORD
 036246  005337  011504                 DEC     SYNCC           ;DEC SYNC COUNT
 036252  001065                        BNE     TXINEX          ;IF NOT ZERO EXIT
 036254  032737  001000  006602 TXIN1:  BIT     #PAD,FLAG       ;IS THE PAD BIT SET
 036262  001414                        BEQ     TXIN2           ;GO TO 2 IF NOT SET
 036264  012777  000377  153166         MOV     #377,@TXDBUF    ;LOAD FF TO TX DATA REG.
 036272  042777  000120  153156         BIC     #TINTEN!SEND,@TXCSR     ;CLEAR TX INT ENABLE
 036300  005237  037126                 INC     TXREADY         ;TELL PROTOCOL MODULE WE'RE DONE
 036304  052737  000010  006602         BIS     #QTX,FLAG       ;SET THE TX COMPLETE
 036312  000445                        BR      TXINEX          ;AND EXIT
 036314  005737  011502         TXIN2:  TST     MSGCC           ;ALL DATA SENT ?
 036320  001416                        BEQ     TXIN4           ;YES,BRANCH
 036322  005037  006556                 CLR     DATAWORD        ;BE SURE ITS CLEAR
 036326  013702  011500                 MOV     MSGPTR,R2       ;LOAD R2 WITH TX BUFFER POINTER ADDR.
 036332  112237  006556                 MOVB    (R2)+,DATAWORD  ;PUT DATA IN LOW BYTE
 036336  010237  011500                 MOV     R2,MSGPTR       ;RESTORE UPDATED POINTER
```

```
 6545  036342  013777  006556  153110          MOV     DATAWORD,@TXDBUF;HI BYTE TSOM=0.. LO BYTE = DATA
 6546  036350  005337  011502                  DEC     MSGCC           ;BUMP CHAR COUNT
 6547  036354  000424                          BR      TXINEX          ;
 6548  036356  012777  001000  153074  TXIN4:  MOV     #TEOM,@TXDBUF   ;SEND CRC CHARACTER
 6549  036364  032737  000020  006602          BIT     #TXM,FLAG       ;IS THIS THE END OF DATA MSG.
 6550  036372  001012                          BNE     TXIN3           ;IF SO SET THE PAD BIT
 6551  036374  052737  000020  006602          BIS     #TXM,FLAG       ;IF NOT MUST BE END OF HEADER
 6552  036402  013737  006454  011500          MOV     DVTXA,MSGPTR    ;SO SET UP MSGPTR FOR MSG
 6553  036410  013737  006456  011502          MOV     DVTCC,MSGCC     ;AND THE CC FOR MSG.
 6554  036416  000403                          BR      TXINEX
 6555  036420  052737  001000  006602  TXIN3:  BIS     #PAD,FLAG       ;SET THE PAD BIT
 6556
 6557  036426  012602                  TXINEX: MOV     (SP)+,R2        ;RESTORE R2
 6558  036430                                  ENDSRV
 6559  036430                                                                  L10021:
 6560  036430  000002                                                                 RTI
```

```
6561                                    .SBTTL                  DEVICE TRANSMIT CONTROL MSG
6562                                    ;++
6563                                    ; FUNCTIONAL DESCRIPTION:
6564                                    ;       THIS ROUTINE DOES THE FOLLOWING
6565                                    ;       QUES A RX SPACE AT RHDMSG+1
6566                                    ;       QUES A TX MSG FROM HDMSG+1
6567                                    ;       CHECKS FOR A TIMER EXPIRED
6568                                    ;       IF EXPIRED RETURN TO CALLER
6569                                    ;       ELSE CHECK FOR A TX MSG COMPLETED
6570                                    ;       IF TX COMPLETED CHECK FOR RX COMPLETED
6571                                    ;       ELSE RECHECK TIMER AND TX COMPLETED UNTIL
6572                                    ;       EITHER TX COMPLETE OR TIME OUT
6573                                    ;       IF TX COMPLETE AND RX NOT COMPLETE THEN
6574                                    ;       REQUE TX MSG.
6575                                    ;       ELSE IF RX COMPLETE RETURN.
6576                                    ;
6577                                    ; INPUTS:
6578                                    ;       TXM             - SET IN FLAG WORD
6579                                    ;       HDMSG+2         - TYPE OF CONTROL MSG..
6580                                    ;
6581                                    ; SUBORDINATE ROUTINES USED:
6582                                    ;               "CLRRTS"        - CLEAR REQUEST TO SEND IF HALF DUP.
6583                                    ; CALLING SEQUENCE:
6584                                    ;               JSR     PC,DVIN31
6585                                    ; RETURN:
6586                                    ;       RETURN TO CALLER IF SOMETHING RX'D OR TIMER OUT.
6587                                    ;
6588                                    ;--
6589
6590  036432  042737  000404  006602  DVIN31: BIC     #QRX!#BCC,FLAG          ;CLEAR RX COMPLETE & CRC ALREADY CHECK
6591
6592  036440  012737  002657  011510          MOV     #RHDMSG+1,RMSGPT        ;SET UP POINTER
6593  036446  013737  002654  011512          MOV     HDMC,RMSGCC             ;AND CC
6594
6595
6596  036454  052777  000560  152766          BIS     #RINTEN!RXENA!DSITEN!STRIP,@RXCSR  ;TURN ON RX
6597
6598                                          ;SET UP TXMITTER TO SEND
6599
6600  036462  004737  036576          DVIN32: JSR     PC,CTSSR                ;SET RTS .
6601  036466  042737  001010  006602          BIC     #QTX!PAD,FLAG           ;CLEAR TX COMPT FLAG.
6602  036474  012737  002645  011500          MOV     #HDMSG+1,MSGPTR         ;MOVE THE CURRENT POINTER TO MSGPTR.
6603  036502  013737  002654  011502          MOV     HDMC,MSGCC
6604  036510  012737  000010  011504          MOV     #8.,SYNCC               ;SET UP SYNC COUNT
6605  036516  052777  000120  152732          BIS     #SEND!TINTEN,@TXCSR     ;TURN ON TX
6606
6607                                          ;NOW WAIT FOR TIME OUT OR TX COMPLETE
6608
6609  036524                          DVIN35: BREAK
6610  036524  104422                                                          TRAP    C$BRK
6611  036526  005737  006646                  TST     TIMERS          ;IS IT TIMED OUT
6612  036532  001420                          BEQ     DVIN34          ;IF YES EXIT
6613  036534  032737  000010  006602          BIT     #QTX,FLAG       ;IS TX DONE
6614  036542  001770                          BEQ     DVIN35          ;IF NOT GO BACK AND CK TIME OUT
6615  036544  004737  037010                  JSR     PC,CLRRTS       ;CLEAR RTS IF HALF DUPLEX
6616  036550  012737  002000  006536          MOV     #2000,TEMP1     ;WAIT FOR RX TO COMPLETE
```

```
 6617  036556  005337  006536          DVIN36: DEC     TEMP1           ;BUMP COUNTER
 6618  036562  001375                          BNE     DVIN36          ;DO IT AGAIN
 6619  036564  032737  000004  006602          BIT     #QRX,FLAG       ;DID WE RX ANYTHING
 6620  036572  001733                          BEQ     DVIN32          ;IF NOT RETRANSMIT LAST
 6621  036574  000207                  DVIN34: RTS     PC              ;RETURN TO CALLER
 6622
```

```
                        .SBTTL                  DEVICE RTS TO CTS DELAY
                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       CTSSR--THIS ROUTINE SETS DATA TERMINAL READY AND
                        ;       REQUEST TO SEND TO THE MODEM AND CHECKS FOR
                        ;       CLEAR TO SEND TO COME BACK.
                        ;       IF CTS DOES NOT COME BACK BEFORE TIMER EXPIRES
                        ;       AND ERROR IS REPORTED AND WE TRY AGAIN.
                        ;       THE ROUTINE IS SKIPPED IF INTERNAL LOOP IS SET.
                        ;
                        ; OUTPUTS:
                        ;
                        ; SUBORDINATE ROUTINES USED:
                        ;               'LGDVE' -       LOG DEVICE ERROR
                        ; CALLING SEQUENCE:
                        ;               JSR     PC,CTSSR
                        ;--

036576  022737  000001  006572  CTSSR:  CMP     #1,MLTYP        ;IS THIS TTL LOOP
036604  001500                          BEQ     DVTXR9          ;BR IF YES
                                        ;SET DTR,RTS AND WAIT FOR CTS
036606  032737  004000  006602  DVTXR3: BIT     #FIRST,FLAG
036614  001014                          BNE     CTSS3           ;IF NOT FIRST TIME SKIP DELY
036616  012737  177777  006534          MOV     #-1,TEMP
036624  005237  006534          CTSS4:  INC     TEMP
036630                                  BREAK
036630  104422                                                                  TRAP    C$BRK
036632  005737  006534                  TST     TEMP
036636  001372                          BNE     CTSS4           ;IF NOT ZERO GO BACK
036640  052737  004000  006602          BIS     #FIRST,FLAG     ;SET FIRST FLAG.
036646  012737  001000  006642  CTSS3:  MOV     #1000,TIMER1    ;SET UP TIMER FOR 1000 TICKS
036654  005737  006574                  TST     FHDPLX          ;FULL DUPLEX ?
036660  001012                          BNE     CTSS7           ;YES,BRANCH
036662  004737  035152          10$:    CALL    DVMOD           ;GET MODEM STATUS
036666  032737  010000  007556          BIT     #DCD,MODS       ;CARRIER DETECTED?
036674  001404                          BEQ     CTSS7           ;NO,BRANCH
036676  005737  006642                  TST     TIMER1          ;TIME DONE ?
036702  001417                          BEQ     DVTXR4          ;YES,BRANCH
036704  000766                          BR      10$             ;TRY AGAIN
036706  052777  000006  152534  CTSS7:  BIS     #DTR!RTS,@RXCSR ;SET REQUEST TO SEND AND
                                                                ;DATA TERMINAL READY            **JPB
036714  012737  001750  006642          MOV     #1000 ,TIMER1   ;SET UP TIMER
036722                          DVTXR2: BREAK
036722  104422                                                                  TRAP    C$BRK
036724  032777  020000  152516          BIT     #CTS,@RXCSR     ;IS CLEAR TO SEND BACK
036732  001025                          BNE     DVTXR1          ;BR. IF CTS IS SET
036734  005737  006642                  TST     TIMER1          ;ELSE TEST IF TIME EXPIRED
036740  001370                          BNE     DVTXR2          ;BR IF TIME NOT EXPRIED.
                                        ;SET ERROR FOR NO CTS
```

```
 6679
 6680  036742  012737  017026  006540  DVTXR4: MOV     #DVEM1,TEMP2
 6681  036750  017737  152474  006542          MOV     @RXCSR,TEMP3
 6682  036756  017737  152474  006544          MOV     @TXCSR,TEMP4
 6683  036764  004737  020162                  JSR     PC,LGDVE
 6684  036770  005237  006506                  INC     ERRCNT
 6685  036774                                  ERRSOFT 6,DVEM1,ERR13
 6686  036774  104457                                                  TRAP    C$ERSOFT
 6687  036776  000006                                                  .WORD   6
 6688  037000  017026                                                  .WORD   DVEM1
 6689  037002  017636                                                  .WORD   ERR13
 6690  037004  000700                          BR      DVTXR3          ;THEN TRY TO SET RTS AGAIN
 6691  037006                          DVTXR1:
 6692  037006  000207                  DVTXR9: RTS     PC              ;
```

```
 CZDCLB DUP-11 DATA COMM. LINK TEST     MACY11 30A(1052)  20-JUL-83  13:19  PAGE 167
CZDCLB.P11    19-JUL-83 17:12                        DEVICE CLEAR REQUEST TO SEND

  6693                                  .SBTTL                  DEVICE CLEAR REQUEST TO SEND
  6694                                  ;++
  6695                                  ; FUNCTIONAL DESCRIPTION:
  6696                                  ;       THIS ROUTINE CLEARS REQUEST TO SEND IF
  6697                                  ;       IN HALF DUPLEX MODE OR MULTI-POINT.(WITH PROTOCOL)
  6698                                  ; CALLING SEQUENCE:
  6699                                  ;       JSR     PC,CLRRTS
  6700                                  ;--
  6701
  6702  037010                          CLRRTS:
  6703  037010  005737  037132                 TST     MPPTP           ;MULTI-POINT ?
  6704  037014  001003                         BNE     20$             ;YES,BRANCH
  6705  037016  005737  006574                 TST     FHDPLX          ;IS THIS FULL DUPLEX
  6706  037022  001012                         BNE     DVTR5           ;BRANCH IF YES
  6707  037024  017737  152426  006540  20$:    MOV     @TXCSR,TEMP2    ;GET RX STATUS
  6708  037032  032737  001000  006540         BIT     #TXACT,TEMP2    ;ALL DATA SENT ?
  6709  037040  001371                         BNE     20$             ;NO,WAIT
  6710  037042  042777  000004  152400         BIC     #RTS,@RXCSR     ;CLEAR REQUEST TO SEND
  6711  037050  000207                 DVTR5:  RTS     PC              ;RETURN TO CALLER
  6712
```

```
                                        .SBTTL  DDCMP PROTOCOL MODULE
                                ;*******************************************************************************

                                        ; DCLT DDCMP PROTOCOL MODULE

                                        .EVEN
                                ;; LOCAL STORAGE

                                ;; TABLE OF STATISTICS AND ERRORS
                                ;;; NOTE: KEEP THE VARIABLES TOGETHER AND IN SEQUENCE
                                ;;;       OTHERWISE THE RPT> ROUTINE WILL PRINT WRONG INFO.

037052  000000                  PRSTAT: .WORD 0                 ;STATUS FLAGS
                                                                ;BIT0 = BCCOK
                                                                ;BIT1 = BCCBAD
                                                                ;BIT2 = SNAK
                                                                ;BIT3 = SACK
                                                                ;BIT4 = SDATA
                                                                ;SPARE
                                                                ;BIT6 = RXD
                                                                ;BIT7 = SPARE
                                                                ;BIT8 = NAKRX
                                                                ;BIT9 = MYDATA
                                                                ;BIT10 = SSTACK
                                                                ;BIT11 =SSTART
037054  000000                  TMESTX: .WORD 0                 ;TOTAL DATA MESSAGES TRANSMITTED(16 BIT COUNTER
037056  000000                  TMESRX: .WORD 0                 ;TOTAL DATA MESSAGES RECEIVED(16 BIT COUNTER)

037060      000                 N:      .BYTE 0                 ;# OF HIGHEST SEQUENTIAL DATA MESSAGE TRANS
                                                                ;; MITTED BY THIS STATION
037061      000                 A:      .BYTE 0                 ;# OF THE HIGHEST SEQUENTIAL DATA MESSAGE
                                                                ;; THAT HAS BEEN ACKNOWLEDGE TO THIS STATION

037062      000                 T:      .BYTE 0                 ;# OF THE NEXT DATA MESSAGE TO BE TRANSMITTED
037063      000                 X:      .BYTE 0                 ;LAST MESSAGE NUMBER TRANSMITTED

037064      000                 R:      .BYTE 0                 ;LAST MESSAGE RECEIVED
037065      000                 TRIBN:  .BYTE 0                 ;TRIB ADDRESS  PT TO PT = 1

                                ;; ERROR COUNTERS
037066      000                 REMTMO: .BYTE 0                 ;REMOTE REPLY TIMEOUTS(ACKS SENT NUM=R)
037067      000                 GLOBCC: .BYTE 0                 ;GLOBAL CRC ERRORS

037070      000                 REANAK: .BYTE 0                 ;REASON FOR LAST NAK SENT
037071      000                 SELTHER:.BYTE 0                 ;SELECTION THRESHOLD ERROR

037072      000                 RXTHER: .BYTE 0                 ;RECEIVE THRESHOLD ERRORS
037073      000                 TXTHER: .BYTE 0                 ;TRANSMIT THRESHOLD ERRORS
```

```
6763
6764
6765  037074    000          DEROUT: .BYTE 0          ;DATA ERRORS OUTBOUND (NAKS RECEIVED
6766  037075    000          OUTMASK:.BYTE 0          ;; REASONS = 1,2,OR 3)
6767                                                  ;MASK VALUES -- BIT0 = HEADER CRC ERROR
6768                                                  ;             -- BIT1 = DATA FIELD CRC ERROR
6769                                                  ;             -- BIT2 = REP RESPONSE NUM<>R
6770
6771  037076    000          DERIN:  .BYTE 0          ;DATA ERRORS INBOUND (NAKS TRANSMITTED
6772  037077    000          INMASK: .BYTE 0          ;; REASONS = 1,2,OR 3)
6773                                                  ;MASK VALUES -- BIT0 = HEADER CRC ERROR
6774                                                  ;             -- BIT1 = DATA FIELD CRC ERROR
6775                                                  ;             -- BIT2 = REP RESPONSE NUM<>R
6776
6777  037100    000          LBUFER: .BYTE 0          ;LOCAL BUFFER ERRORS (NAKS SENT
6778  037101    000          LBMASK: .BYTE 0          ;; REASONS = 8. OR 16.)
6779                                                  ;MASK VALUES -- BIT0 = BUFFER NOT AVAILABLE
6780                                                  ;             -- BIT1 = MESSAGE TOO LONG
6781
6782  037102    000          RBUFER: .BYTE 0          ;REMOTE BUFFER ERRORS (NAKS RECEIVED
6783  037103    000          RBMASK: .BYTE 0          ;REASONS 8. OR 16.)
6784                                                  ;MASK VALUES -- BIT0 = BUFFER NOT AVAILBLE
6785                                                  ;             -- BIT1 = MESSAGE TOO LONG
6786
6787  037104    000          RMSTER: .BYTE 0          ;REMOTE STATION ERRORS (NAKS RECEIVED
6788  037105    000          RMMASK: .BYTE 0          ;REASON 9. OR 17.)
6789                                                  ;MASK VALUES-- BIT0 = RECEIVER OVERRUN
6790                                                  ;              BIT1 = FORMAT ERROR
6791
6792  037106    000          LOSTER: .BYTE 0          ;LOCAL STATION ERRORS (NAKS SENT
6793  037107    000          LSMASK: .BYTE 0          ;; REASON 9. OR 17.)
6794                                                  ;MASK VALUES -- BIT0 = RECEIVER OVERRUN
6795                                                  ;             -- BIT1 = FORMAT ERROR
6796
6797  037110  000000         RXTXTE: .WORD 0          ;RX AND TX THRESHOLD ERRORS (OVERFLOWS)
6798  037112    000          SPARE0: .BYTE 0
6799  037113    000          SPARE1: .BYTE 0
6800  037114  000000         PROEND: .WORD 0          ;END OF PROTOCOL COUNTERS
6801  037116  000000         IMFLAG: .WORD 0          ;IMAGE OF MAIN CODE FLAG WORD
6802  037120  000000         RXPRC:  .WORD 0          ;-1 = MESSAGE RX'ED & 'ACK' SENT
6803  037122  000000         TXPRC:  .WORD 0          ;-1 = MESSAGE TX'ED & 'ACK' RECEIVED
6804  037124  000000         ASTRT:  .WORD 0          ;-1 = STACK SENT
6805  037126  000000         TXREADY:.WORD 0          ; 1 = READY TO SEND ANOTHER MESSAGE
6806  037130  000000         PRUN:   .WORD 0          ; 1 = PROTOCOL RUNNING. USED IN THIS MODULE
6807  037132  000000         MPPTP:  .WORD 0          ; 1 = MULTI POINT NETWORK
6808  037134  000000         SELECT: .WORD 0          ; 1 =THIS STATION CAN NOW TRANSMIT(HALF/DUPLEX)
6809  037136  000000         IMPRSTAT:.WORD 0         ; COPY OF PROTOCOL STATUS WORD
6810  037140  000000         PRFLAG: .WORD 0          ; USED TO COMMUNICATE WITH RX INTER. ROUTINE
6811  037142  000000         HDXMTP: .WORD 0          ; 1 = HALF DUPLEX OR MULTI-POINT
6812  037144  000000         PRTEMP: .WORD 0          ; TEMPORARY WORK LOCATION
6813  037146  000000         TURNON: .WORD 0          ; 1 = RECEIVER IS ALREADY ON
6814  037150  000000         TIMEOUT: .WORD 0         ; 20 = PRINT 'TX OR RX NOT COMPLETE'
6815
```

```
                        ;; NAK REASONS VALUES AS USED IN NAK CONTROL MESSAGES

000001                          HEADBCC = 1             ;HEADER BCC ERROR
000002                          DATABCC = 2             ;DATA BCC ERROR
000003                          REPSENT = 3             ;REP RESPONSE
000010                          BUFFNA  = 10            ;BUFFER TEMPORARILY NOT AVAILABLE
000011                          RXOVRUN = 11            ;RECEIVER OVERRUN
000020                          MESLONG = 20            ;MESSAGE TOO LONG
000021                          FORMERR = 21            ;HEADER FORMAT ERROR


                        ;; ADDITIONAL NAK BIT MASKS AS USED IN COUNTERS

000004                          REPMSK = BIT2           ;REPLY RESPONSE
000001                          RXOVMSK= BIT0           ;RECEIVER OVERRUN
000002                          FMTMSK = BIT1           ;FORMAT ERROR
000002                          MTLMSK = BIT1           ;MESSAGE TOO LONG
000001                          BNAMSK = BIT0           ;BUFFER NOT AVAILABLE

                        ;; MESSAGE TYPE DEFINITIONS

000201                          SOH = 201               ;DATA MESSAGE
000144                          MAINT = 144             ;MAINTENANCE MESSAGE
000005                          ENQ = 5                 ;CONTROL MESSAGE


                        ;;SUBTYPES OF CONTROL MESSAGES

000001                          ACK = 1                 ;ACKNOWLEDGE MESSAGE
000002                          NAK = 2                 ;NEGATIVE ACKNOWLEDGE MESSAGE
000003                          REP = 3                 ;REPLY TO MESSAGE NUMBER
000006                          STRT = 6                ;START MESSAGE
000007                          STACK = 7               ;START ACKNOWLEDGE MESSAGE


                        ;;STATUS WORD BIT DEFINITIONS

000001                          BCCOK = BIT0            ;BCC CHECKED GOOD
000002                          BCCBAD = BIT1           ;BCC CHECKED BAD
000004                          SACK = BIT2             ;SEND ACK
000010                          SNAK = BIT3             ;SEND NAK
000020                          SDATA = BIT4            ;SEND DATA
000100                          RXD = BIT6              ;RECEIVER DONE
000400                          NAKRX = BIT8            ;NAK RECEIVED
001000                          MYDATA = BIT9           ;MY DATA
002000                          SSTACK = BIT10          ;SEND START ACKNOWLEDGE
004000                          SSTART = BIT11          ;SEND START
```

```
                                ;*****************************************************************************
                                ;       THE BELOW TABLES AND ASCIZ MESSAGES ARE USED IN DCLT
                                ;               REPORTING OF ERROR COUNTERS. THEY MUST REMAIN IN THE
                                ;               CURRENT SEQUENCE ELSE WE'LL BE REPORTING ERRONEOUS
                                ;               DATA.
                                ;*****************************************************************************

037152  037262                 STALST: .WORD   STA0A           ;POINTER FOR OFFSET 0 ASCII
037154  037311                         .WORD   STA1A           ;POINTER FOR OFFSET 1 ASCII
037156  037347                         .WORD   STA2A           ;POINTER FOR OFFSET 2 ASCII
037160  037403                         .WORD   STA3A           ;POINTER FOR OFFSET 3 ASCII
037162  037475                         .WORD   STA4A           ;POINTER FOR OFFSET 4 ASCII
037164  037561                         .WORD   STA5A           ;POINTER FOR OFFSET 5 ASCII
037166  037641                         .WORD   STA6A           ;POINTER FOR OFFSET 6 ASCII
037170  037725                         .WORD   STA7A           ;POINTER FOR OFFSET 7 ASCII
037172  040007                         .WORD   STA10A          ;POINTER FOR OFFSET 10 ASCII
037174  040071                         .WORD   STA11A          ;POINTER FOR OFFSET 11 ASCII
037176  040166                         .WORD   STA12A          ;POINTER FOR OFFSET 12 ASCII
037200  040262                         .WORD   STA13A          ;POINTER FOR OFFSET 13 ASCII
037202  040360                         .WORD   STA14A          ;POINTER FOR OFFSET 14 ASCII
037204  040456                         .WORD   STA15A          ;POINTER FOR OFFSET 15 ASCII
037206  040544                         .WORD   STA16A          ;POINTER FOR OFFSET 16 ASCII
037210  040631                         .WORD   STA17A          ;POINTER FOR OFFSET 17 ASCII

                                        ;TABLE FOR PRINT ROUTINES
                                        ;PRIW: WORD ROUTINE
                                        ;PRIBB: BYTE/BYTE ROUTINE
                                        ;PRIBS: BYTE SPECIAL ROUTINE

037212  021642                 STAIND: .WORD   PRIW
037214  021642                         .WORD   PRIW
037216  021642                         .WORD   PRIW
037220  021670                         .WORD   PRIBB
037222  021670                         .WORD   PRIBB
037224  021670                         .WORD   PRIBB
037226  021670                         .WORD   PRIBB
037230  021670                         .WORD   PRIBB
037232  021670                         .WORD   PRIBB
037234  021726                         .WORD   PRIBS
037236  021726                         .WORD   PRIBS
037240  021726                         .WORD   PRIBS
037242  021726                         .WORD   PRIBS
037244  021726                         .WORD   PRIBS
037246  021726                         .WORD   PRIBS
037250  021642                         .WORD   PRIW

037252  000000                 LAST:    .WORD   0               ;LAST MESSAGE TO PRINT
037254  000000                 FIR:     .WORD   0               ;FIRST MESSAGE TO PRINT
037256  000000                 MES:     .WORD   0               ;HOLDS MESSAGE
037260  000000                 MESDATA: .WORD   0               ;DATA PART OF MESSAGE
```

```
                                        ;*****************************************************************************
                                        ;       THE BELOW ASCIZ MESSAGES USED IN 'RPT>' LEVEL OF DCLT
                                        ;
                                        .NLIST BEX
037262  047045  047445  022466  STA0A:  .ASCIZ  /%N%O6%S2%ASTATUS FLAGS/
037311     045  022516  033117  STA1A:  .ASCIZ  /%N%O6%S2%ADATA MSGS. TX'MITTD/
037347     045  022516  033117  STA2A:  .ASCIZ  /%N%O6%S2%ADATA MSGS. RX'CVD/
037403     045  022516  031517  STA3A:  .ASCIZ  /%N%O3%S5%AHIGHEST MSG # TX'D%N%O3%S5%AHIGHEST MSG # ACK'D/
037475     045  022516  031517  STA4A:  .ASCIZ  /%N%O3%S5%ANEXT MSG # TO TX%N%O3%S5%ALAST MSG # TX'D/
037561     045  022516  031517  STA5A:  .ASCIZ  /%N%O3%S5%AHIGHEST MSG # RX'D%N%O3%S5%ATRIB ADDR/
037641     045  022516  031517  STA6A:  .ASCIZ  /%N%O3%S5%AREMOTE TIME OUTS%N%O3%S5%AGLOBAL CRC ERRS/
037725     045  022516  031517  STA7A:  .ASCIZ  /%N%O3%S5%ANAK REASON%N%O3%S5%ASELECT THRESH. ERRS/
040007     045  022516  031517  STA10A: .ASCIZ  /%N%O3%S5%ARX THRESH ERRS%N%O3%S5%ATX THRESH. ERRS/
040071     045  022516  031517  STA11A: .ASCIZ  /%N%O3%S5%ADATA ERRORS OUT%N%S8%AHBCC %O1%A BCC %O1%A REP %O1/
040166  047045  047445  022463  STA12A: .ASCIZ  /%N%O3%S5%ADATA ERRORS IN%N%S8%AHBCC %O1%A BCC %O1%A REP %O1/
040262  047045  047445  022463  STA13A: .ASCIZ  /%N%O3%S5%ALOCAL BUFFER ERRS%N%S8%A NO BUFF %O1%A TOO BIG  %O1/
040360  047045  047445  022463  STA14A: .ASCIZ  /%N%O3%S5%AREMOTE BUFFER ERRS%N%S8%A NO BUFF %O1%A TOO BIG %O1/
040456  047045  047445  022463  STA15A: .ASCIZ  /%N%O3%S5%AREMOTE STA ERRS%N%S8%AOVRN %O1%A FORMAT %O1/
040544  047045  047445  022463  STA16A: .ASCIZ  /%N%O3%S5%ALOCAL STA ERRS%N%S8%AOVRN %O1%A FORMAT %O1/
040631     045  022516  033117  STA17A: .ASCIZ  /%N%O6%S2%ATX & RX THRESHOLD ERRORS(OVERFLOW)/
                                            .EVEN
                                        .LIST BEX
                                        ;*****************************************************************************
```

```
                                ;*****************************************************************************
                                ; PROTOCOL ROUTINE:
                                ;
                                ;       DESCRIPTION: IF THE USER SPECIFIES THE '/PROTOCOL' SWITCH THIS
                                ;                    ROUTINE WILL BE CALLED. THIS ROUTINE DECIDES IF
                                ;                    WE ARE TRANSMITTING AND/OR RECEIVING AND CALLS
                                ;                    THE NECESSARY ROUTINES.
                                ;                 THIS CODE WAS WRITTEN ONLY TO BE USED WITH DCLT.
                                ;
                                ;*****************************************************************************

040706  013737  006602  037116  PROTOC: MOV     FLAG,IMFLAG     ;SAVE COPY OF MAIN CODE 'FLAG' VARIABLE
040714  012737  000001  037126          MOV     #1,TXREADY      ;INIT TRANSMIITER DONE FLAG
040722  005037  037120                  CLR     RXPRC           ;INIT RX PROCOTOL DONE
040726  005037  037122                  CLR     TXPRC           ;INIT TX PROCOTOL DONE
040732  005037  037150                  CLR     TIMEOUT         ;INIT PRINT TIMER
040736  032737  000100  006576          BIT     #PRORUN,PARAM   ;PROTOCOL RUNNING ?
040744  001067                          BNE     7$              ;YES,BRANCH

                                ;; PROTOCOL NOT RUNNING -- SO FIRE UP THE LINK
040746                          SETVEC  INVEC,#PRRXI,#PRI05     ;LOAD RX PROTOCOL INTERRUPT ROUTINE
040746  012746  000240                                                  MOV     #PRI05,-(SP)
040752  012746  044510                                                  MOV     #PRRXI,-(SP)
040756  013746  011462                                                  MOV     INVEC,-(SP)
040762  012746  000003                                                  MOV     #3,-(SP)
040766  104437                                                          TRAP    C$SVEC
040770  062706  000010                                                  ADD     #10,SP
040774  005037  037142                  CLR     HDXMTP          ;INIT HALF DUPLEX/MULTI-POINT FLAG
041000  005737  006574                  TST     FHDPLX          ;HALF DUPLEX ?
041004  001403                          BEQ     2$              ;YES,BRANCH
041006  005737  037132                  TST     MPPTP           ;MULTI POINT ?
041012  001403                          BEQ     3$              ;NO,BRANCH
041014  012737  000001  037142  2$:     MOV     #1,HDXMTP       ;SET HALF DUPLEX/MULTI-POINT

041022  012737  000036  006646  3$:     MOV     #30.,TIMERS     ;30 SECONDS TO START
041030  012737  000001  037134          MOV     #1,SELECT       ;INIT SELECT
041036  005037  037146                  CLR     TURNON          ;INIT YET ANOTHER FLAG
041042  005037  037130                  CLR     PRUN            ;INIT ANOTHER FLAG
041046  005037  037124                  CLR     ASTRT           ;INIT 'STACK SENT' FLAG
041052  005037  037052                  CLR     PRSTAT          ;INIT STATUS WORD
041056  004737  041734                  JSR     PC,PROINT       ;INIT PROTOCOL COUNTERS AND VARIABLES
041062  005737  037132                  TST     MPPTP           ;MULTI - POINT MODE ?
041066  001005                          BNE     4$              ;YES,BRANCH
041070  052737  004000  037052          BIS     #SSTART,PRSTAT  ;TELL TX ROUTINE TO SEND 'START'
041076  004737  045336                  JSR     PC,TXPROTO      ;GO SEND IT
041102  004737  042104          4$:     JSR     PC,RXPROTO      ;GO WAIT FOR 'STACK' OR 'START'
041106  032737  000100  006576          BIT     #PRORUN,PARAM   ;DID PROTOCOL START ?
041114  001742                          BEQ     3$              ;NO,TRY AGAIN
041116  012737  000001  037130          MOV     #1,PRUN         ;THIS FLAG USED IN RXPROTO ROUTINE

                                ;; IF HALF DUPLEX OR MULTI POINT, WE MUST MANAGE THE LINK DIFFERENTLY
041124  012737  000003  006646  7$:     MOV     #3.,TIMERS      ;SET UP TIMER
041132  005737  037142                  TST     HDXMTP          ;HALF DUPLEX OR MULTI - POINT?
```

```
 6995  041136  001076                          BNE     PROHDX          ;YES,BRANCH
 6996
 6997                                ;; IF FULL DUPLEX AND ACTIVE MODE-- JUMP
 6998  041140  022737  000003  006570          CMP     #ACT,MODTYP     ;ACTIVE MODE?
 6999  041146  001440                          BEQ     200$            ;YES, BRANCH
 7000
 7001                                ;; PROTOCOL IS RUNNING -- LINK IS HOT SO SEND DATA
 7002
 7003  041150  032737  000010  037116  10$:    BIT     #QTX,IMFLAG     ;TRANSMITTING A MESSAGE ?
 7004  041156  001414                          BEQ     100$            ;NO,BRANCH
 7005  041160  052737  000020  037052  20$:    BIS     #SDATA,PRSTAT   ;SEND DATA FLAG
 7006  041166  004737  045336                  CALL    TXPROTO         ;GO SEND THE MESSAGE
 7007  041172  004737  042104                  CALL    RXPROTO         ;CHECK THE REPLY
 7008  041176  005737  037122                  TST     TXPRC           ;MESSAGE TRANSMITTED & "ACK'ED"?
 7009  041202  001766                          BEQ     20$             ;NO,BRANCH
 7010  041204  005237  037054                  INC     TMESTX          ;BUMP "TOTAL MESSAGES TRANSMITTED" COUNTER
 7011
 7012  041210  005737  037120          100$:   TST     RXPRC           ;RECEIVE PROTOCOL FINISHED ?
 7013  041214  001011                          BNE     110$            ;YES,BRANCH
 7014  041216  032737  000004  037116          BIT     #QRX,IMFLAG     ;RECEIVING A MESSAGE ?
 7015  041224  001002                          BNE     105$            ;YES,BRANCH
 7016  041226  000137  041674                  JMP     PROTEX          ;EXIT
 7017
 7018
 7019  041232  004737  042104          105$:   CALL    RXPROTO         ;GO PROCESS INCOMING MESSAGE
 7020  041236  000764                          BR      100$            ;SEE IF RECEIVE PROTOCOL COMPLETE
 7021  041240  005237  037056          110$:   INC     TMESRX          ;BUMP "TOTAL MESSAGES RECEIVED" COUNTER
 7022  041244  000137  041674                  JMP     PROTEX          ;EXIT
 7023
 7024
 7025                                ;; ACTIVE MODE (FULL DUPLEX AND POINT TO POINT LINKS)
 7026
 7027  041250  004737  042000          200$:   CALL    RXON            ;TURN ON RECEIVER
 7028  041254  052737  000020  037052  210$:   BIS     #SDATA,PRSTAT   ;SEND DATA FLAG
 7029  041262  004737  045336                  CALL    TXPROTO         ;DO SEND DATA MESSAGE
 7030  041266  004737  042104          215$:   CALL    RXPROTO         ;GO PROCESS INCOMING MESSAGE
 7031  041272  005737  037122                  TST     TXPRC           ;TX PROTOCOL DONE ?
 7032  041276  001766                          BEQ     210$            ;NO,BRANCH
 7033  041300  005737  037120                  TST     RXPRC           ;RX PROTOCOL DONE ?
 7034  041304  001770                          BEQ     215$            ;NO,BRANCH
 7035  041306  005237  037056                  INC     TMESRX          ;BUMP 'TOTAL MESSAGES RECEIVED'
 7036  041312  005237  037054                  INC     TMESTX          ;BUMP "TOTAL MESSAGE SENT" COUNTER
 7037
 7038                                ;; TXREADY SET IN TX INTERRUPT ROUTINE
 7039  041316  005737  037126          220$:   TST     TXREADY         ;MESSAGE SENT ?
 7040  041322  001775                          BEQ     220$            ;NO,BRANCH
 7041  041324  004737  042000                  CALL    RXON            ;TURN ON RECEIVER
 7042  041330  000137  041674                  JMP     PROTEX          ;EXIT
 7043
 7044
 7045                                ;;; THIS ROUTINE(PROHDX) IS USE IN HALF-DUPLEX PT-PT & MTP
 7046
 7047  041334                          PROHDX:
 7048  041334  005737  006574          10$:    TST     FHDPLX          ;FULL DUPLEX ?
 7049  041340  001072                          BNE     PROFDX          ;YES,BRANCH
 7050  041342  032737  000010  037116          BIT     #QTX,IMFLAG     ;TRANSMITTING ?
```

```
 7051  041350  001424                          BEQ     100$            ;NO,BRANCH
 7052  041352  005737  037134          20$:    TST     SELECT          ;DO WE HAVE THE SELECT BIT ?
 7053  041356  001005                          BNE     30$             ;YES,BRANCH
 7054  041360  004737  042000                  CALL    RXON            ;TURN ON RX
 7055  041364  004737  042110          25$:    CALL    RXWAIT          ;TURN ON RX AND WAIT FOR SELECT BIT
 7056  041370  000770                          BR      20$             ;DID WE GET THE SELECT BIT ?
 7057  041372  052737  000020  037052  30$:    BIS     #SDATA,PRSTAT   ;SEND DATA FLAG
 7058  041400  004737  045336                  CALL    TXPROTO         ;GO SENT IT
 7059  041404  004737  042104                  CALL    RXPROTO         ;CHECK REPLY
 7060  041410  005737  037122                  TST     TXPRC           ;TX PROTOCOL DONE ?
 7061  041414  001756                          BEQ     20$             ;NO,BRANCH
 7062  041416  005237  037054                  INC     TMESTX          ;BUMP TOTAL MESSAGES SENT
 7063  041422  012737  000001  037122  100$:   MOV     #1,TXPRC        ;SET TX PROTOCOL DONE
 7064  041430  005737  037120          103$:   TST     RXPRC           ;RX PROTOCOL DONE ?
 7065  041434  001026                          BNE     150$            ;YES,BRANCH
 7066  041436  032737  000004  037116          BIT     #QRX,IMFLAG     ;RECEIVING ?
 7067  041444  001002                          BNE     110$            ;YES,BRANCH
 7068  041446  000137  041674                  JMP     PROTEX          ;EXIT
 7069                                  ;;WAS THE BALL TOSSED BACK IN OUR COURT ?
 7070  041452  005737  037134          110$:   TST     SELECT          ;HAVE WE RECEIVED THE SELECT BIT YET?
 7071  041456  001005                          BNE     130$            ;YES,BRANCH
 7072  041460  004737  042000                  CALL    RXON            ;TURN ON RECEIVER
 7073  041464  004737  042110          115$:   CALL    RXWAIT          ;PROCESS DATA
 7074  041470  000757                          BR      103$            ;TRY AGAIN
 7075  041472  052737  000004  037052  130$:   BIS     #SACK,PRSTAT    ;SEND ACK TO TURN THE LINE AROUND
 7076  041500  004737  045336                  CALL    TXPROTO         ;SEND IT
 7077  041504  004737  042104                  CALL    RXPROTO         ;GO RECEIVE THE PENDING MESSAGE
 7078  041510  000747                          BR      103$            ;BRANCH
 7079  041512  005237  037056          150$:   INC     TMESRX          ;BUMP'RECIEVED MESSAGE COUNTER'
 7080  041516  004737  042000                  CALL    RXON            ;TURN ON RX
 7081  041522  000137  041674                  JMP     PROTEX          ;EXIT
 7082
 7083                                  ;;THIS ROUTINE(PROFDX:) USED WITH FULL DUPLEX-MULTI POINT LINKS
 7084
 7085  041526  032737  000010  037116  PROFDX: BIT     #QTX,IMFLAG     ;TRANSMITTING ?
 7086  041534  001003                          BNE     10$             ;YES,BRANCH
 7087  041536  012737  000001  037122          MOV     #1,TXPRC        ;SET TRANSMIT PROTOCOL COMPLETE
 7088  041544  005737  037120          10$:    TST     RXPRC           ;WAS THE 1ST MESSAGE RX'ED DURING STARTUP?
 7089  041550  001015                          BNE     30$             ;YES,BRANCH
 7090  041552  032737  000004  037116          BIT     #QRX,IMFLAG     ;RECEIVING ?
 7091  041560  001004                          BNE     20$             ;YES,BRANCH
 7092  041562  012737  000001  037120          MOV     #1,RXPRC        ;SET RECEIVE PROTOCOL COMPLETE
 7093  041570  000410                          BR      100$            ;BRANCH
 7094  041572  004737  042104          20$:    CALL    RXPROTO         ;PROCESS INCOMING MESSAGE
 7095  041576  005737  037120                  TST     RXPRC           ;DONE ?
 7096  041602  001773                          BEQ     20$             ;NO,BRANCH
 7097  041604  005237  037056          30$:    INC     TMESRX          ;BUMP RX MESSAGE COUNT
 7098  041610  000400                          BR      100$            ;BRANCH
 7099
 7100  041612  005737  037122          100$:   TST     TXPRC           ;ANYTHING TO SEND ?
 7101  041616  001024                          BNE     135$            ;NO,BRANCH
 7102
 7103  041620  005737  037134          120$:   TST     SELECT          ;DO WE HAVE PERMISSION TO SEND ?
 7104  041624  001005                          BNE     130$            ;YES,BRANCH
 7105  041626  004737  042000                  CALL    RXON            ;TURN ON TX
 7106  041632  004737  042110          125$:   CALL    RXWAIT          ;WAIT ON SELECT BIT
```

```
 7107  041636  000770                          BR      120$            ;TRY AGAIN
 7108  041640  052737  000020  037052  130$:   BIS     #SDATA,PRSTAT   ;SEND DATA FLAG
 7109  041646  004737  045336                  CALL    TXPROTO         ;SEND DATA
 7110  041652  004737  042104                  CALL    RXPROTO         ;CHECK REPLY
 7111  041656  005737  037122                  TST     TXPRC           ;TRANSMIT PROTOCOL DONE ?
 7112  041662  001756                          BEQ     120$            ;NO,TRY AGAIN
 7113  041664  005237  037054                  INC     TMFSTX          ;BUMP 'TOTAL MESSAGE SENT' COUNTER
 7114  041670  004737  042000          135$:   CALL    RXON            ;TURN ON RX SO THAT WE WON'T MISS ANY MESSAGES
 7115                                                                  ;; WHILE WE AWAY.
 7116  041674  022737  177777  037056  PROTEX: CMP     #-1,TMESRX      ;;MAX?
 7117  041702  001002                          BNE     10$             ;NO,BRANCH
 7118  041704  005337  037056                  DEC     TMESRX          ;LATCH AT 177776
 7119  041710  022737  177777  037054  10$:    CMP     #-1,TMESTX      ;MAX?
 7120  041716  001002                          BNE     15$             ;NO,BRANCH
 7121  041720  005337  037054                  DEC     TMESTX          ;LATCH AT 177776
 7122  041724  013737  037116  006602  15$:    MOV     IMFLAG,FLAG     ;RESTORE 'FLAG' TO ITS ORIGINAL VALUE
 7123  041732  000207                          RTS     PC              ;EXIT
 7124
 7125
```

```
                                ;*****************************************************************************
                                ;
                                ;       PROTOCOL INIT ROUTINE:
                                ;
                                ;               THIS ROUTINE WILL INITIALIZE THE ERROR COUNTERS AND  MESSAGE
                                ;               COUNTERS AS NEEDED FOR PROPER DDCMP PROTOCOL OPERATION.
                                ;               DURING NORMAL OPERATION THIS CODE WILL BE CALLED ONCE FROM
                                ;               PROTOCOL STARTUP ROUTINE.
                                ;
                                ;*****************************************************************************

041734  010146                  PROINT: MOV     R1,-(SP)        ;SAVE R1
041736  113737  037065  006534          MOVB    TRIBN,TEMP      ;SAVE TRIB NUMBER
041744  012701  037052                  MOV     #PRSTAT,R1      ;FIRST LOCATION TO CLEAR
041750  005021                  10$:    CLR     (R1)+           ;CLEAR AND INCREMENT
041752  020127  037114                  CMP     R1,#PROEND      ;LAST LOCATION TO CLEAR
041756  001374                          BNE     10$             ;NO,BRANCH
041760  113737  006534  037065  20$:    MOVB    TEMP,TRIBN      ;RESTORE TRIB #
041766  112737  000001  037062          MOVB    #1,T            ;FIRST MESSAGE # TO BE TRANMITTED
041774  012601                          MOV     (SP)+,R1        ;RESTORE R1
041776  000207                          RETURN                  ;EXIT

                                ;*****************************************************************************
                                ; TURN ON RECEIVER ROUTINE:
                                ;
                                ;       DESCRIPTION: THIS ROUTINE SIMPLY ENABLES THE RECEIVER AND
                                ;                    INITIALIZES VARIABLES THEN RETURNS.
                                ;
                                ;*****************************************************************************

042000  005737  037146          RXON:   TST     TURNON          ;RX ALREADY ON ?
042004  001036                          BNE     RXONEX          ;YES,BRANCH
042006  005037  037052                  CLR     PRSTAT          ;INIT STATUS WORD
042012  005037  002656                  CLR     RHDMSG          ;INIT 1ST WORD OF RX BUFFER
042016  042737  000444  037140          BIC     #QRX!#BCC!#RXM,PRFLAG   ;FLAGS USED IN RX INTERRUPT ROUTINE
042024  052737  001000  037052          BIS     #MYDATA,PRSTAT  ;ASSUME MESSAGE FOR ME
042032  012737  002657  011510          MOV     #RHDMID,RMSGPT  ;BUFFER ADDRESS FOR HEADER PART ON MESSAGE
042040  013737  002654  011512          MOV     HDMC,RMSGCC     ;INIT CHARACTER COUNT = 6
042046  032737  000010  006576          BIT     #MOCHK,PARAM    ;MODEM CHANGES WANTED ?
042054  001004                          BNE     20$             ;YES,BRANCH
042056  052777  000520  147364          BIS     #RINTEN!RXENA!STRIP,@RXCSR      ;TURN ON RX
042064  000403                          BR      25$             ;BRANCH
042066  052777  000560  147354  20$:    BIS     #RINTEN!RXENA!DSITEN!STRIP,@RXCSR       ;TURN ON RX
042074  012737  000001  037146  25$:    MOV     #1,TURNON       ;RX IS ON FLAG
042102  000207                  RXONEX: RETURN
```

```
;*****************************************************************************
; RECEIVER PROTOCOL ROUTINE:
;
;       DESCRIPTION: THIS ROUTINE WILL PROCESS AN INCOMING MESSAGE
;                    AND DETERMINE IF IT'S A VALID CONTROL OR DATA
;                    MESSAGE. IF AN ERROR IS DETECTED THE APPROIATE
;                    ERROR COUNTERS WILL BE UPDATED BY THE ERROR
;                    ROUTINE.
;
;       SUBORDINATE ROUTINES USED: 'TXPROTO''
;                                  'ERROR PROCESSOR''
;
;*****************************************************************************


042104                  RXPROTO:
042104  004737  042000          CALL    RXON            ;TURN ON RECEIVER

                        ;; WAIT FOR FIRST CHARACTER TO APPEAR IN RX BUFFER
042110                  RXWAIT:
042110                  20$:    BREAK                   ;CHECK FOR ^C
042110  104422                                                          TRAP    C$BRK
042112  105737  002657          TSTB    RHDMID          ;FIRST CHARACTER READ ?
042116  001007                  BNE     30$             ;YES, BRANCH
042120  005737  006646          TST     TIMERS          ;60 SECONDS ELAPSED ?
042124  001371                  BNE     20$             ;NO,BRANCH
042126  004737  043732          JSR     PC,ERRPRC       ;CALL ERROR PROCESSOR
042132  000137  043730          JMP     RXPREX          ;EXIT

                        ;; IF A CONTROL MESSAGE THEN TELL RX INTR. TO PROCESS HEADER ONLY
042136  123727  002657  000005  30$:    CMPB    RHDMID,#ENQ     ;CONTROL MESSAGE ?
042144  001003                  BNE     40$             ;NO,BRANCH
042146  052737  000040  037140          BIS     #RXM,PRFLAG     ;PROCESS HEADER ONLY

                        ;; WAIT FOR CRC TO BE CHECKED
042154  032737  000003  037052  40$:    BIT     #BCCOK!BCCBAD,PRSTAT    ;CRC CHECKED ?
042162  001021                  BNE     50$                     ;YES,BRANCH
042164  005737  006646          TST     TIMERS          ;60 SECONDS ELAPSED ?
042170  001004                  BNE     45$             ;NO,BRANCH
042172  004737  043732          JSR     PC,ERRPRC       ;GO PROCESS ERROR
042176  000137  042104          JMP     RXPROTO         ;TRY AGAIN
```

```
7220
7221
7222                                        ;; CHECK THAT RX WAS SERVICED QUICK ENOUGH(DETERMINED BY RX INTER. ROUTINE)
7223  042202  032737  000010  037052  45$:    BIT     #SNAK,PRSTAT    ;RX OVERRUN ?
7224  042210  001761                          BEQ     40$             ;NO,BRANCH
7225  042212  004737  043732                  JSR     PC,ERRPRC       ;GO PROCESS ERROR
7226  042216  004737  045336                  JSR     PC,TXPROTO      ;GO SEND NAK
7227  042222  000137  042104                  JMP     RXPROTO         ;TRY AGAIN
7228
7229                                        ;; IF HEADER CRC ERROR THEN LOG IT AND SEND NAK
7230  042226  032737  000002  037052  50$:    BIT     #BCCBAD,PRSTAT  ;CRC ERROR ?
7231  042234  001430                          BEQ     60$             ;NO,BRANCH
7232  042236  052737  000010  037052          BIS     #SNAK,PRSTAT    ;SET SNAK (SEND NAK)
7233  042244  152737  000001  037077          BISB    #HEADBCC,INMASK ;SET THE MASK
7234  042252  112737  000001  037070          MOVB    #HEADBCC,REANAK ;NAK REASON = 1
7235  042260  105237  037076                  INCB    DERIN           ;LOG DATA ERROR INBOUND
7236  042264  001003                          BNE     55$             ;BRANCH IF NOT OVERFLOW
7237  042266  112737  000377  037076          MOVB    #377,DERIN      ;LATCH COUNTER AT 255.
7238  042274  004737  043732          55$:    JSR     PC,ERRPRC       ;GO PROCESS ERROR
7239  042300  012737  000001  037134          MOV     #1,SELECT       ;IF HALF/DUPLEX, WE ASSUME S-BIT WAS SET
7240  042306  004737  045336                  JSR     PC,TXPROTO      ;GO SEND NAK
7241  042312  000137  042104                  JMP     RXPROTO         ;TRY AGAIN
7242
7243                                        ;; NOW CHECK THE ADDRESS OF THE MESSAGE- IS IT FOR ME ?
7244  042316  123737  037065  002664  60$:    CMPB    TRIBN,RHDADR    ;MY ADDRESS ?
7245  042324  001422                          BEQ     70$             ;YES, BRANCH
7246
7247                                        ;; ITS NOT FOR ME, BUT COUNT IT OUT TO KEEP RX IN SYNC
7248  042326  042737  001000  037052  62$:    BIC     #MYDATA,PRSTAT  ;MESSAGE NOT FOR ME
7249  042334  032737  000100  037052          BIT     #RXD,PRSTAT     ;RECEIVER DONE ?
7250  042342  001003                          BNE     65$             ;YES,BRANCH
7251  042344  005737  006646                  TST     TIMERS          ;HAVE WE DAWDLED LONG ENOUGH ?
7252  042350  001366                          BNE     62$             ;NO,BRANCH
7253
7254  042352  032737  000001  037052  65$:    BIT     #BCCOK,PRSTAT   ;DATA CRC OK ?
7255  042360  001002                          BNE     67$             ;YES,BRANCH
7256  042362  105237  037067                  INCB    GLOBCC          ;LOG GLOBAL CRC ERROR
7257  042366  000137  042104          67$:    JMP     RXPROTO         ;GO RE-QUE BUFFER
7258
7259
7260                                        ;; IS IT A CONTROL MESSAGE ? IF IT IS PROCESS IT
7261
7262  042372  105037  037072          70$:    CLRB    RXTHER          ;INIT RX THRESHOLD ERROR COUNTER
7263  042376  122737  000005  002657          CMPB    #ENQ,RHDMID     ;CONTROL MESSAGE ?
7264  042404  001402                          BEQ     75$             ;YES,BRANCH
7265  042406  000137  043256                  JMP     200$            ;GO PROCESS DATA MESSAGE
7266
7267                                        ;; IS IT A NAK ?
7268  042412  122737  000002  002660  75$:    CMPB    #NAK,RHDTYP     ;NAK?
7269  042420  001022                          BNE     90$             ;NO,BRANCH
7270  042422  032737  000100  006576          BIT     #PRORUN,PARAM   ;PROTOCOL RUNNING ?
7271  042430  001002                          BNE     80$             ;YES,BRANCH
7272  042432  000137  042104                  JMP     RXPROTO         ;IGNORE THIS MESSAGE
7273  042436  052737  000400  037052  80$:    BIS     #NAKRX,PRSTAT   ;FLAG NAK RECEIVED
7274  042444  004737  043732                  JSR     PC,ERRPRC       ;GO LOG NAK REASON
7275  042450  052737  000020  037052          BIS     #SDATA,PRSTAT   ;SEND DATA
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 7276  042456  004737  045336                  JSR     PC,TXPROTO      ;GO RE-TRANSMIT PREVIOUS MESSAGE
 7277  042462  000137  042104                  JMP     RXPROTO         ;GO RE-QUE RX
```

```
7278
7279
7280                                        ;; IS IT A ACK ?
7281  042466  122737  000001  002660  90$:    CMPB    #ACK,RHDTYP     ;ACK ?
7282  042474  001057                         BNE     100$            ;NO,BRANCH
7283  042476  032737  000100  006576         BIT     #PRORUN,PARAM   ;PROTOCOL RUNNING ?
7284  042504  001004                         BNE     93$             ;YES,BRANCH
7285  042506  052737  000100  006576         BIS     #PRORUN,PARAM   ;TELL THE WORLD THAT LINK HAS STARTED
7286  042514  000445                         BR      97$             ;EXIT
7287  042516  123737  037062  002662  93$:    CMPB    T,RHDREP        ;CORRECT MESSAGE # ACKNOWLEDGED ?
7288  042524  001405                         BEQ     95$             ;YES,BRANCH
7289  042526  005737  037142                 TST     HDXMTP          ;HALF DUPLEX/MULTI -POINT ?
7290  042532  001036                         BNE     97$             ;YES,BRANCH
7291  042534  000137  042104                 JMP     RXPROTO         ;TRY AGAIN
7292  042540  105037  037073         95$:    CLRB    TXTHER          ;INIT. TX THRESHOLD COUNTER
7293  042544  113737  037062  037060         MOVB    T,N             ;HIGHEST SEQUENTIAL MESSAGE # SENT
7294  042552  113737  037062  037063         MOVB    T,X             ;HIGHEST MESSAGE # SENT
7295  042560  113737  002662  037061         MOVB    RHDREP,A        ;HIGHEST MESSAGE # ACKNOWLEDGED TO THIS STATION
7296  042566  105237  037062                 INCB    T               ;# OF NEXT DATA MESSAGE TO BE TRANSMITTED
7297  042572  012737  177777  037122         MOV     #-1,TXPRC       ;TRANSMIT PROTOCOL COMPLETE
7298  042600  022737  000003  006570         CMP     #ACT,MODTYP     ;ACTIVE MODE ?
7299  042606  001010                         BNE     97$             ;NO,BRANCH
7300  042610  005737  037120                 TST     RXPRC           ;RX PROTOCOL COMPLETE?
7301  042614  001005                         BNE     97$             ;YES,BRANCH
7302  042616  005737  006574                 TST     FHDPLX          ;HALF DUPLEX?
7303  042622  001402                         BEQ     97$             ;YES,BRANCH
7304  042624  000137  042104                 JMP     RXPROTO         ;GO PROCESS INCOMING MESSAGE
7305
7306  042630  000137  043730         97$:    JMP     RXPREX          ;EXIT
7307
7308                                        ;; IS IT A REP ?
7309  042634  122737  000003  002660  100$:   CMPB    #REP,RHDTYP     ;REP ?
7310  042642  001054                         BNE     150$            ;NO,BRANCH
7311
7312                                        ;; NUM = R ?
7313  042644  032737  000100  006576         BIT     #PRORUN,PARAM   ;PROTOCOL RUNNING ?
7314  042652  001002                         BNE     110$            ;YES,BRANCH
7315  042654  000137  042104                 JMP     RXPROTO         ;IGNORE MESSAGE- TRY AGAIN
7316  042660  123737  002663  037064  110$:   CMPB    RHDNUM,R        ;HAVE WE RECEIVED THIS MESSAGE ?
7317  042666  001015                         BNE     120$            ;NO, BRANCH
7318  042670  052737  000004  037052         BIS     #SACK,PRSTAT    ;SET SEND ACK
7319  042676  105237  037066                 INCB    REMTMO          ;BUMP REMOTE TIME OUT COUNTER
7320  042702  001003                         BNE     115$            ;BRANCH IF NOT OVERFLOW
7321  042704  112737  000377  037066         MOVB    #377,REMTMO     ;LATCH COUNTER AT 255.
7322  042712  004737  045336         115$:   JSR     PC,TXPROTO      ;GO SEND ACK
7323  042716  000137  042104                 JMP     RXPROTO         ;TRY AGAIN
7324
7325                                        ;; NUM <> R
7326  042722  052737  000010  037052  120$:   BIS     #SNAK,PRSTAT    ;SET SEND NAK
7327  042730  112737  000003  037070         MOVB    #REPSENT,REANAK ;SET REASON FOR NAK
7328  042736  105237  037076                 INCB    DERIN           ;BUMP DATA ERROR INBOUND
7329  042742  001003                         BNE     125$            ;BRANCH IF NOT OVERFLOW
7330  042744  112737  000377  037076         MOVB    #377,DERIN      ;LATCH AT 255.
7331  042752  152737  000004  037077  125$:   BISB    #REPMSK,INMASK  ;ERROR REASON IS REMOTE TIME OUT
7332  042760  004737  043732                 JSR     PC,ERPPRC       ;PROCESS NAK
7333  042764  004737  045336                 JSR     PC,TXPROTO      ;GO SEND NAK
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 7334  042770  000137  042104                JMP     RXPROTO         ;TRY AGAIN
```

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7335
7336
7337                                        ;; IS IT A START ?
7338  042774  122737  000006  002660  150$:  CMPB    #STRT,RHDTYP    ;START ?
7339  043002  001071                        BNE     170$            ;NO,BRANCH
7340  043004  032737  000100  006576        BIT     #PRORUN,PARAM   ;PROTOCOL RUNNING ?
7341  043012  001007                        BNE     160$            ;YES,BRANCH
7342  043014  052737  002000  037052        BIS     #SSTACK,PRSTAT  ;SEND START ACKNOWLEDGE
7343  043022  004737  045336                JSR     PC,TXPROTO      ;GO SEND STACK
7344  043026  000137  042104                JMP     RXPROTO         ;GO TO RX ROUTINE AND EXPECT ACK OR DATA
7345                                                                ;; IF DMV OR DMP.
7346
7347  043032  052737  000200  006576  160$:  BIS     #ABORT,PARAM    ;TELL MAIN CODE TO ABORT!!
7348  043040  012737  177777  037120        MOV     #-1,RXPRC       ;RECEIVE PROTCOL DONE
7349  043046  012737  177777  037122        MOV     #-1,TXPRC       ;TRANSMIT PROTOCOL DONE
7350  043054                                PRINTF  #165$           ;FATAL ERROR
7351  043054  012746  043100                                                MOV     #165$,-(SP)
7352  043060  012746  000001                                                MOV     #1,-(SP)
7353  043064  010600                                                        MOV     SP,R0
7354  043066  104417                                                        TRAP    C$PNTF
7355  043070  062706  000004                                                ADD     #4,SP
7356  043074  000137  043730                JMP     RXPREX          ;EXIT
7357
7358                                      .NLIST BEX
      043100  047045  040445  052123  165$:  .ASCIZ  /%N%ASTART RECEIVED WITH PROTOCOL RUNNING--ABORTING!!/
              043166                        .EVEN
                                          .LIST BEX
7359
7360                                        ;; IS IT A STACK ? IF SO SEND AN 'ACK'
7361
7362  043166  122737  000007  002660  170$:  CMPB    #STACK,RHDTYP   ;STACK ?
7363  043174  001012                        BNE     180$            ;NO, BRANCH
7364  043176  052737  000004  037052        BIS     #SACK,PRSTAT    ;TELL TX ROUTINE TO SEND ACK
7365  043204  004737  045336                JSR     PC,TXPROTO      ;SEND ACK
7366  043210  052737  000100  006576        BIS     #PRORUN,PARAM   ;SET 'PROTOCOL RUNNING' FLAG
7367  043216  000137  043730                JMP     RXPREX          ;EXIT
7368
7369
7370                                        ;; IF WE GOT TO HERE, WE HAVE A STRANGE PROBLEM !
7371  043222  052737  000010  037052  180$:  BIS     #SNAK,PRSTAT    ;SET SEND NAK FLAG
7372  043230  105237  037106                INCB    LOSTER          ;LOCAL STATION ERROR
7373  043234  152737  000021  037107        BISB    #FORMERR,LSMASK ;FORMAT ERROR
7374  043242  004737  043732                JSR     PC,ERRPRC       ;PROCESS ERROR
7375  043246  004737  045336                JSR     PC,TXPROTO      ;SEND NAK
7376  043252  000137  042104                JMP     RXPROTO         ;TRY AGAIN
7377                                      ;; END OF CONTROL MESSAGE PROCESSOR
7378
7379
7380
```

```
 7381
 7382
 7383                                   ;;;HERE WE BEGIN PROCESSING DATA PART OF MESSAGE
 7384
 7385
 7386  043256  005737  037120          200$:   TST     RXPRC           ;ALREADY PROCESSED A MESSAGE?
 7387  043262  001432                          BEQ     215$            ;NO,BRANCH
 7388  043264  042737  001000  037052          BIC     #MYDATA,PRSTAT  ;TELL RX INTERRUPT NOT TO STORE THIS
 7389  043272  005737  037122                  TST     TXPRC           ;TX PROTOCOL DONE ?
 7390  043276  001037                          BNE     220$            ;YES,BRANCH
 7391                                   ;; SEE IF IMPLICIT ACK IMBEDDED IN THIS MESSAGE
 7392  043300  123737  037062  002662          CMPB    T,RHDREP        ;RESP=MESSAGE SENT?
 7393  043306  001033                          BNE     220$            ;NO,BRANCH
 7394  043310  113737  037062  037060          MOVB    T,N             ;HIGHEST # SENT
 7395  043316  113737  037062  037063          MOVB    T,X             ;
 7396  043324  113737  037062  037061          MOVB    T,A             ;HIGHEST MESSAGE ACK'ED
 7397  043332  105237  037062                  INCB    T               ;NEXT MESSAGE TO SEND
 7398  043336  012737  177777  037122          MOV     #-1,TXPRC       ;TX PROTOCOL DONE
 7399  043344  000137  043730                  JMP     RXPREX          ;EXIT
 7400                                   ;;CHECK SEQUENCE OF MESSAGE
 7401  043350  105237  037064          215$:   INCB    R               ;EXPECTED #?
 7402  043354  123737  037064  002663          CMPB    R,RHDNUM        ;CORRECT MESSAGE #?
 7403  043362  001423                          BEQ     300$            ;YES,PROCESS IT
 7404  043364  105337  037064                  DECB    R               ;SUBTRACT 1
 7405  043370  042737  001000  037052          BIC     #MYDATA,PRSTAT  ;JUST COUNT OUT MESSAGE-DON'T PUT IN BUFFER
 7406  043376  032737  000100  037052  220$:   BIT     #RXD,PRSTAT     ;WAIT FOR DONE
 7407  043404  001003                          BNE     250$            ;BRANCH
 7408  043406  005737  006646                  TST     TIMERS          ;TIME OUT?
 7409  043412  001371                          BNE     220$            ;NO,BRANCH
 7410
 7411                                   ;;SEND AN "ACK"
 7412  043414  052737  000004  037052  250$:   BIS     #SACK,PRSTAT    ;SEND ACK
 7413  043422  004737  045336                  CALL    TXPROTO         ;GO SEND IT
 7414  043426  000137  042104                  JMP     RXPROTO         ;TRY AGAIN
 7415
 7416                                   ;; IS DATA PART OF MESSAGE COMPLETE ?
 7417  043432  032737  000100  037052  300$:   BIT     #RXD,PRSTAT     ;MESSAGE COMPLETE ?
 7418  043440  001021                          BNE     330$            ;YES,BRANCH
 7419
 7420                                   ;; IS THE LINE DEAD ?
 7421  043442  005737  006646                  TST     TIMERS          ;TIMED-OUT ?
 7422  043446  001004                          BNE     305$            ;NO,BRANCH
 7423  043450  004737  043732                  JSR     PC,ERRPRC       ;GO PROCESS TIMER ERROR
 7424  043454  000137  042104                  JMP     RXPROTO         ;TRY AGAIN
 7425
 7426                                   ;; CHECK FOR RECEIVER OVERRUN OR BUFFER PROBLEM
 7427  043460  032737  000010  037052  305$:   BIT     #SNAK,PRSTAT    ;DID RX INTERRUPT SET THIS ?
 7428  043466  001761                          BEQ     300$            ;NO,BRANCH
 7429
 7430                                   ;;RX ERROR SEND A NAK AND TRY AGAIN
 7431  043470  004737  043732                  JSR     PC,ERRPRC       ;GO PROCESS ERROR
 7432  043474  004737  045336                  JSR     PC,TXPROTO      ;SEND NAK
 7433  043500  000137  042104                  JMP     RXPROTO         ;TRY AGAIN
 7434
 7435                                   ;;CHECK FOR DATA CRC ERROR
 7436  043504  032737  000001  037052  330$:   BIT     #BCCOK,PRSTAT   ;DATA CRC GOOD ?
```

```
 7437  043512  001022                          BNE     400$            ;YES,BRANCH
 7438
 7439                                  ;; LOG CRC ERROR AND SEND A NAK
 7440  043514  052737  000010  037052          BIS     #SNAK,PRSTAT    ;SET SEND NAK FLAG
 7441  043522  105237  037076                  INCB    DERIN           ;BUMP DATA ERROR INBOUND COUNTER
 7442  043526  001003                          BNE     340$            ;BRANCH IF NOT OVERFLOW
 7443  043530  112737  000377  037076          MOVB    #377,DERIN      ;LATCH AT 255.
 7444  043536  152737  000002  037077  340$:   BISB    #DATABCC,INMASK ;SET DATA CRC BIT
 7445  043544  004737  043732                  JSR     PC,ERRPRC       ;GO PROCESS ERROR
 7446  043550  004737  045336                  JSR     PC,TXPROTO      ;GO SEND NAK
 7447  043554  000137  042104                  JMP     RXPROTO         ;TRY AGAIN
 7448
 7449
 7450                                  ;; WE HAVE A GOOD MESSAGE !!! SO ACKNOWLEDGE IT
 7451  043560  032737  000100  006576  400$:   BIT     #PRORUN,PARAM   ;PROTOCOL RUNNING?
 7452  043566  001007                          BNE     420$            ;YES,BRANCH
 7453  043570  005737  037124                  TST     ASTRT           ;DID WE SEND A STACK?
 7454  043574  001001                          BNE     415$            ;YES,BRANCH
 7455  043576  000454                          BR      RXPREX          ;EXIT
 7456
 7457                                  ;; NOTE: DMV/DPM WILL SEND 'START - STACK - DATA' FOR STARTUP SEQUENCE
 7458  043600  052737  000100  006576  415$:   BIS     #PRORUN,PARAM   ;SET PROTOCOL RUNNING
 7459
 7460                                  ;; CHECK FOR AN IMPLICIT 'ACK'
 7461  043606  123737  037062  002662  420$:   CMPB    T,RHDREP        ;RESP = MESSAGE SENT ?
 7462  043614  001016                          BNE     450$            ;NO,BRANCH
 7463  043616  113737  037062  037060          MOVB    T,N             ;HIGHEST SEQ MESSAGE # SENT
 7464  043624  113737  037062  037063          MOVB    T,X             ;HIGHEST MESSAGE SENT
 7465  043632  113737  037062  037061          MOVB    T,A             ;HIGHEST MESSAGE 'ACK'ED'
 7466  043640  105237  037062                  INCB    T               ;NEXT MESSAGE # TO TRANSMIT
 7467  043644  012737  177777  037122          MOV     #-1,TXPRC       ;SET TRANSMIT PROTOCOL COMPLETE
 7468  043652  052737  000004  037052  450$:   BIS     #SACK,PRSTAT    ;SET SEND ACK FLAG
 7469  043660  004737  045336                  JSR     PC,TXPROTO      ;SEND ACK
 7470  043664  012737  177777  037120          MOV     #-1,RXPRC       ;RECEIVE MESSAGE PROTOCOL FINISHED
 7471  043672  005737  037130                  TST     PRUN            ;PROTOCOL RUNNING ?
 7472  043676  001414                          BEQ     RXPREX          ;NO,BRANCH
 7473  043700  005737  037142                  TST     HDXMTP          ;FULL DUPLEX PT-PT?
 7474  043704  001011                          BNE     RXPREX          ;NO,BRANCH
 7475  043706  022737  000003  006570          CMP     #ACT,MODTYP     ;ACTIVE MODE ?
 7476  043714  001005                          BNE     RXPREX          ;NO,BRANCH
 7477  043716  005737  037122                  TST     TXPRC           ;TRANSMIT PROTOCOL COMPLETE ?
 7478  043722  001002                          BNE     RXPREX          ;YES,BRANCH
 7479  043724  000137  042104                  JMP     RXPROTO         ;GO PROCESS MESSAGE
 7480
 7481  043730  000207          RXPREX: RETURN                          ;DONE !!
 7482
```

```
;*****************************************************************************
;       ERROR PROCESSING ROUTINE (ERRPRC):
;
;       DESCRIPTION: THIS ROUTINE IS USED TO PROCESS INBOUND AND
;                       OUTBOUND ERRORS. ALSO THE 60 SECOND 'WATCHDOG'
;                       TIMER IS CHECKED.
;
;                    THE MAJORITY OF THE CODE IS USED IN PROCESSING
;                       OUTBOUND ERRORS (NAKS RECEIVED). THE NAK REASON
;                       TYPE IS DETERMINED AND THE APPROIATE ERROR
;                       COUNTER IN INCREMENTED. IF THE TRANSMIT THRESHOLD
;                       COUNTER (TXTHER) REACHES 7, IT IS CLEARED
;                       AND THE CUMULATIVE RECEIVE/TRANSMIT THRESHOLD
;                       ERROR (RXTXTE) COUNTER IS BUMPED.
;*****************************************************************************


;;CHECK THE WATCHDOG TIMER

043732  005737  006646          ERRPRC: TST     TIMERS          ;60 SECONDS ELAPSED
043736  001075                          BNE     10$             ;NO,BRANCH
043740  032737  000100  006576          BIT     #PRORUN,PARAM   ;PROTOCOL RUNNING ?
043746  001034                          BNE     7$              ;YES,BRANCH

;; INFORM USER OF 'START - STACK' TIMEOUT
043750  005037  006542                  CLR     TEMP3           ;INIT IT
043754  005037  006544                  CLR     TEMP4           ;INIT IT
043760  012737  017313  006540          MOV     #DVEM5,TEMP2    ;"TIME OUT IN START-STACK SEQUENCE"
043766  113737  002660  006542          MOVB    RHDMCC,TEMP3    ;RECEIVED DATA
043774  113737  002646  006544          MOVB    HDMCC,TEMP4     ;TRANSMITTED DATA
044002  004737  020162                  JSR     PC,LGDVE        ;LOG TIME OUT IN EVENT LOG
044006  005237  006506                  INC     ERRCNT          ;BUMP ERROR COUNT
044012                                  ERRSOFT 10.,DVEM5,ERR13 ;PRINT ERROR
044012  104457                                                          TRAP    C$ERSOFT
044014  000012                                                          .WORD   10
044016  017313                                                          .WORD   DVEM5
044020  017636                                                          .WORD   ERR13
044022  005237  006502                  INC     OPVAR           ;BUMP ERROR COUNTER
044026  012737  000036  006646          MOV     #30.,TIMERS     ;RE-INIT TIMER
044034  000137  044506                  JMP     ERREXT          ;EXIT

;; INFORM USER OF "DATA MESSAGE" TIMEOUT
044040  005237  037150          7$:     INC     TIMEOUT         ;BUMP COUNTER
044044  022737  000024  037150          CMP     #20.,TIMEOUT    ;60 SECONDS ?
044052  001023                          BNE     9$              ;NO,BRANCH
044054  012737  017110  006540          MOV     #DVEM2,TEMP2    ;"TIME OUT WAITING FOR RX OR TX TO COMPLETE"
044062  017737  145362  006542          MOV     @RXCSR,TEMP3    ;RECEIVER ADDRESS
044070  017737  145362  006544          MOV     @TXCSR,TEMP4    ;TRANSMIT ADDRESS
044076  004737  020162                  JSR     PC,LGDVE        ;LOG ERROR
044102  005237  006506                  INC     ERRCNT          ;BUMP ERROR COUNT
044106                                  ERRSOFT 7,DVEM2,ERR13   ;PRINT ERROR
044106  104457                                                          TRAP    C$ERSOFT
044110  000007                                                          .WORD   7
```

```
 7539  044112  017110                                                          .WORD   DVEM2
 7540  044114  017636                                                          .WORD   ERR13
 7541  044116  005037  037150                CLR     TIMEOUT         ;INIT TIMEOUT
 7542
 7543  044122  012737  000003  006646  9$:   MOV     #3.,TIMERS      ;SET UP TIMER
 7544  044130  000566                        BR      ERREXT          ;EXIT
 7545
 7546
 7547                                  ;;IF A 'NAK' RECEIVED THEN PROCESS IT
 7548  044132  032737  000400  037052  10$:   BIT     #NAKRX,PRSTAT   ;NAK RECEIVED?
 7549  044140  001542                        BEQ     100$            ;NO,BRANCH
 7550
 7551                                  ;;IF TRANSMIT THRESHOLD COUNTER = 7 THEN BUMP CUMULATIVE TXRX COUNTER
 7552  044142  122737  000007  037073        CMPB    #7,TXTHER       ;THRESHOLD REACHED?
 7553  044150  001403                        BEQ     20$             ;YES,BRANCH
 7554  044152  105237  037073                INCB    TXTHER          ;BUMP TRANSMIT THESHOLD
 7555  044156  000404                        BR      30$             ;BRANCH
 7556  044160  005237  037110        20$:   INC     RXTXTE          ;BUMP TRANSMIT/RECEIVE THRESHOLD COUNTER
 7557  044164  105037  037073                CLRB    TXTHER          ;SET TRANSMIT COUNTER TO ZERO
 7558
 7559                                  ;;;;DETERMINE THE 'NAK' REASON
 7560
 7561                                  ;;HEADER CRC ERROR ?
 7562  044170  042737  140000  002660  30$:   BIC     #BIT15!BIT14,RHDTYP     ;CLEAR SELECT & QS FLAG
 7563  044176  122737  000001  002661        CMPB    #HEADBCC,RHDTYP+1       ;HEADER CRC ERROR?
 7564  044204  001012                        BNE     35$                     ;NO,BRANCH
 7565  044206  105237  037074                INCB    DEROUT                  ;LOG ERROR
 7566  044212  001003                        BNE     32$                     ;BRANCH IF NOT OVERFLOW
 7567  044214  112737  000377  037074        MOVB    #377,DEROUT             ;LATCH AT 255.
 7568  044222  152737  000001  037075  32$:   BISB    #HEADBCC,OUTMASK        ;SET MASK
 7569  044230  000526                        BR      ERREXT                  ;EXIT
 7570
 7571                                  ;;DATA CRC ERROR ?
 7572  044232  122737  000002  002661  35$:   CMPB    #DATABCC,RHDTYP+1       ;DATA CRC ERROR ?
 7573  044240  001012                        BNE     40$                     ;NO,BRANCH
 7574  044242  105237  037074                INCB    DEROUT                  ;LOG ERROR
 7575  044246  001003                        BNE     37$                     ;BRANCH IF NOT OVERFLOW
 7576  044250  112737  000377  037074        MOVB    #377,DEROUT             ;LATCH AT 255.
 7577  044256  152737  000002  037075  37$:   BISB    #DATABCC,OUTMASK        ;SET MASK
 7578  044264  000510                        BR      ERREXT                  ;EXIT
 7579
 7580                                  ;;REMOTE STATION BUFFER NOT AVAILABLE?
 7581  044266  122737  000010  002661  40$:   CMPB    #BUFFNA,RHDTYP+1        ;BUFFER NOT AVAILABLE?
 7582  044274  001012                        BNE     45$                     ;NO,BRANCH
 7583  044276  105237  037102                INCB    RBUFER                  ;LOG ERROR
 7584  044302  001003                        BNE     43$                     ;BRANCH IF NOT OVERFLOW
 7585  044304  112737  000377  037102        MOVB    #377,RBUFER             ;LATCH AT 255.
 7586  044312  152737  000001  037103  43$:   BISB    #BNAMSK,RBMASK          ;SET MASK
 7587  044320  000472                        BR      ERREXT                  ;EXIT
 7588
 7589                                  ;;REMOTE STATION RECEIVER OVERRUN?
 7590  044322  122737  000011  002661  45$:   CMPB    #RXOVRUN,RHDTYP+1       ;RECEIVER OVERRUN?
 7591  044330  001012                        BNE     50$                     ;NO, BRANCH
 7592  044332  105237  037104                INCB    RMSTER                  ;LOG ERROR
 7593  044336  001003                        BNE     47$                     ;BRANCH IF NO OVERFLOW
 7594  044340  112737  000377  037104        MOVB    #377,RMSTER             ;LATCH AT 255.
```

```
 7595  044346  152737  000001  037105  47$:    BISB    #RXOVMSK,RMMASK         ;SET MASK
 7596  044354  000454                          BR      ERREXT                  ;EXIT
 7597
 7598                                          ;;REMOTE STATION MESSAGE TOO LONG?
 7599  044356  122737  000020  002661  50$:    CMPB    #MESLONG,RHDTYP+1       ;MESSAGE TOO LONG?
 7600  044364  001012                          BNE     55$                     ;NO,BRANCH
 7601  044366  105237  037102                  INCB    RBUFER                  ;LOG REMOTE STATION BUFFER ERROR
 7602  044372  001003                          BNE     52$                     ;BRANCH IF NO OVERFLOW
 7603  044374  112737  000377  037102          MOVB    #377,RBUFER             ;LATCH AT 255.
 7604  044402  152737  000002  037103  52$:    BISB    #MTLMSK,RBMASK          ;SET MASK
 7605  044410  000436                          BR      ERREXT                  ;EXIT
 7606
 7607                                          ;;REMOTE STATION FORMAT ERROR?
 7608  044412  122737  000021  002661  55$:    CMPB    #FORMERR,RHDTYP+1       ;REMOTE STATION FORMAT ERROR?
 7609  044420  001012                          BNE     100$                    ;NO,BRANCH
 7610  044422  105237  037104                  INCB    RMSTER                  ;LOG ERROR
 7611  044426  001003                          BNE     57$                     ;BRANCH IF NO OVERFLOW
 7612  044430  112737  000377  037104          MOVB    #377,RMSTER             ;LATCH AT 255.
 7613  044436  152737  000002  037105  57$:    BISB    #FMTMSK,RMMASK          ;SET MASK
 7614  044444  000420                          BR      ERREXT                  ;EXIT
 7615
 7616
 7617                                          ;; IF SEND NAK (SNAK=1) THEN BUMP RECEIVER THRESHOLD ERROR COUNTER
 7618                                          ;;;  IF RXTHER = 7 THE BUMP RXTXTE COUNTER AND CLEAR RXTHER
 7619  044446  032737  000010  037052  100$:    BIT     #SNAK,PRSTAT            ;SEND NAK ?
 7620  044454  001414                          BEQ     ERREXT                  ;NO, BRANCH
 7621
 7622  044456  122737  000007  037072          CMPB    #7,RXTHER               ;RECEIVER THRESHOLD = 7?
 7623  044464  001403                          BEQ     120$                    ;YES,BRANCH
 7624  044466  105237  037072                  INCB    RXTHER                  ;BUMP COUNTER
 7625  044472  000405                          BR      ERREXT                  ;BRANCH
 7626
 7627  044474  005237  037110          120$:   INC     RXTXTE                  ;BUMP CUMULATIVE COUNTER
 7628  044500  105037  037072                  CLRB    RXTHER                  ;INIT RECEIVER THRESHOLD COUNTER
 7629  044504  000400                          BR      ERREXT                  ;EXIT
 7630
 7631
 7632
 7633  044506  000207          ERREXT: RETURN
 7634
```

```
                        .SBTTL          RECEIVER PROTOCOL INTERRUPT ROUTINE

                        ;++
                        ; FUNCTIONAL DESCRIPTION:
                        ;       THIS ROUTINE IS USED ONLY WHEN THE "/PROTOCOL" SWITCH
                        ;       IS SPECIFIED BY THE USER.
                        ;
                        ;       WHEN A RX INT. OCCURS THIS ROUTINE DECIDES IF IT IS A DATA SET
                        ;       CHANGE OR DATA INTERRUPT. IF IT IS A DATA SET CHANGE
                        ;       INTERRUPT IT PUTS THE STATUS IN "CMODS" AND COMPARES
                        ;       THAT STATUS TO THE OLD STATUS IN "MODS". IF THEY ARE
                        ;       THE SAME THAT MEANS THE INTERRUPT WAS CAUSED BY A GLITCH
                        ;       ON ONE OF THE LINES. IF THEY ARE DIFFERENT THEN A HARD
                        ;       MODEM ERROR HAS OCCURED. IN ANY EVENT THE MODEM STATUS
                        ;       CHANGE IS LOGGED.
                        ;
                        ;       IF A DATA INTERRUPT, THE ROUTINE CHECK FOR AN OVERRUN
                        ;       CONDITION AND IF SET
                        ;
                        ; INPUTS:
                        ;       RMSGPT - ADDRESS OF RX BUFFER
                        ;       RMSCC  - COUNT OF DATA TO BE RXED.
                        ;
                        ; SUBORDINATE ROUTINES USED:
                        ;               "LOGMSC"        - LOG MODEM STATUS CHANGE
                        ;               "LGDVE"         - LOG DEVICE ERROR
                        ;--
                        ;
                        BGNSRV  PRRXI
                                                                        PRRXI::
044510 010246           MOV     R2,-(SP)        ;SAVE R2
044512 017737 144732 011474     MOV     @RXCSR,IRXCSR   ;MOV RX CSR TO IMAGE
044520 032737 000010 006576     BIT     #MOCHK,PARAM    ;ANY MODEM CHANGES TO REPORT
044526 001453           BEQ     PRIN21          ;IF NOT IGNORE DS CHANGE.
044530 032737 002000 037116     BIT     #INOVR,IMFLAG   ;IS INIT OVER
044536 001447           BEQ     PRIN21          ;NO THEN IGNORE DS CHANGE.
044540 032737 004000 037116     BIT     #FIRST,IMFLAG   ;FIRST TIME HERE?
044546 001443           BEQ     PRIN21          ;YES,BRANCH
044550 005737 011474            TST     IRXCSR          ;DATA SET CHANGE ?
044554 100040           BPL     PRIN21          ;IF DATA SET CHANGE IS NOT SET BR
044556 013737 011474 011472     MOV     IRXCSR,CMODS    ;MOV THE NEW MODEM STATUS IN
044564 042737 104761 011472     BIC     #104761,CMODS   ;CLEAR BITS NOT RELATING TO MODEM STATUS
044572 013737 011472 006542 PRIN2:      MOV     CMODS,TEMP3
044600 013737 007556 006544     MOV     MODS,TEMP4
044606 023737 006544 006542     CMP     TEMP4,TEMP3     ;COMPARE OLD TO CURRENT
044614 001406           BEQ     GLINC           ;INC GLITCH COUNT
044616 005237 011520            INC     MHRCNT          ;INC HARD COUNT
044622 012737 016717 006540     MOV     #HRDMSG,TEMP2   ;SET UP HARD MESG.
044630 000405           BR      PRIN1
044632 005237 011516 GLINC:     INC     MGLCNT          ;INC GLITCH COUNT
044636 012737 016671 006540     MOV     #GLMSG,TEMP2    ;SET UP GLITCH
044644 004737 020336 PRIN1:     JSR     PC,LOGMSC       ;GO LOG MODEM STATUS CHANGE
044650 013737 011472 007556     MOV     CMODS,MODS      ;MOVE CURRENT TO OLD
```

```
 7691                                   ;;TEST FOR DATA
 7692
 7693  044656  032737  000200  011474  PRIN21: BIT     #RXDONE,IRXCSR  ;RX DONE ?
 7694  044664  001002                          BNE     10$             ;YES,BRANCH
 7695  044666  000137  045332                  JMP     PRINEX          ;EXIT
 7696  044672  017737  144556  011476  10$:    MOV     @RXDBUF,IRXDBUF ;READ DATA
 7697  044700  032737  100000  011476          BIT     #RERR,IRXDBUF   ;OVERRUN ERROR ?
 7698  044706  001414                          BEQ     PRIN4           ;NO,BRANCH
 7699
 7700                                   ;;IF AN OVERRUN THEN LOG ERROR,SET NAK REASON,TURN OFF RX & EXIT
 7701  044710  052737  000010  037052          BIS     #SNAK,PRSTAT    ;TELL MAIN CODE ABOUT OVERRUN ERROR
 7702  044716  105237  037106                  INCB    LOSTER          ;LOG LOCAL STATION ERROR
 7703  044722  152737  000001  037107          BISB    #RXOVMSK,LSMASK ;SET RX OVERRUN MASK BIT
 7704  044730  112737  000011  037070          MOVB    #RXOVRUN,REANAK ;SET REASON FOR SENDING NAK
 7705  044736  000570                          BR      PRIN8           ;GO TURN OFF RX AND EXIT
 7706
 7707
 7708                                   ;;;IF IN MULTI-POINT MODE AND NOT MY ADDRESS THEN JUST BUMP CHAR COUNT
 7709
 7710                                   ;;STORE AWAY DATA
 7711  044740  032737  001000  037052  PRIN4:  BIT     #MYDATA,PRSTAT  ;STORE THIS DATA ?
 7712  044746  001406                          BEQ     10$             ;NO,BRANCH
 7713  044750  013702  011510                  MOV     RMSGPT,R2       ;SET RX MESSAGE POINTER
 7714  044754  113722  011476                  MOVB    IRXDBUF,(R2)+   ;STORE DATA AWAY
 7715  044760  010237  011510                  MOV     R2,RMSGPT       ;SAVE UPDATED MESSAGE POINTER
 7716
 7717                                   ;;DECREMENT CHARACTER COUNT
 7718  044764  005337  011512          10$:    DEC     RMSGCC          ;ALL DATA RECEIVED ?
 7719  044770  001160                          BNE     PRINEX          ;NO,BRANCH
 7720  044772  032737  000400  0_7140          BIT     #BCC,PRFLAG     ;CHECK CRC ?
 7721  045000  001410                          BEQ     PRIN6           ;YES,BRANCH
 7722  045002  032737  010000  011476          BIT     #CRCOK,IRXDBUF  ;CRC GOOD ?
 7723  045010  001016                          BNE     PRIN5           ;YES,BRANCH
 7724  045012  052737  000002  037052          BIS     #BCCBAD,PRSTAT  ;TELL MAIN CODE ABOUT CRC ERROR
 7725  045020  000537                          BR      PRIN8           ;DISABLE INTERRUPTS AND EXIT
 7726
 7727                                   ;;;IN ORDER TO CHECK CRC, WE MUST READ 2 MORE CHARACTERS(CRC)
 7728  045022  052737  000400  037140  PRIN6:  BIS     #BCC,PRFLAG     ;SET CRC ALREADY CHECKED FLAG
 7729  045030  012737  000002  011512          MOV     #2,RMSGCC       ;COUNT TWO CHARACTERS
 7730  045036  012737  011514  011510          MOV     #BCCW,RMSGPT    ;CRC STORAGE ADDRESS
 7731  045044  000532                          BR      PRINEX          ;EXIT
 7732
 7733  045046  052737  000001  037052  PRIN5:  BIS     #BCCOK,PRSTAT   ;TELL MAIN CODE CRC HAS BEEN CHECKED
 7734  045054  123737  037065  002664          CMPB    TRIBN,RHDADR    ;MY MESSAGE
 7735  045062  001404                          BEQ     5$              ;YES,BRANCH
 7736  045064  042737  001000  037052          BIC     #MYDATA,PRSTAT  ;DON'T STORE IT
 7737  045072  000407                          BR      7$              ;BRANCH
 7738                                   ;; SELECT BIT SET ?
 7739  045074  032737  100000  002660  5$:     BIT     #BIT15,RHDMCC   ;SELECT BIT SET?
 7740  045102  001403                          BEQ     7$              ;NO,BRANCH
 7741  045104  012737  000001  037134          MOV     #1,SELECT       ;WE NOW HAVE THE RIGHT TO TRANSMIT,IF HALF-DUPL
 7742
 7743  045112  032737  000040  037140  7$:     BIT     #RXM,PRFLAG     ;READ DATA MESSAGE ?
 7744  045120  001071                          BNE     PRIN7           ;NO,BRANCH
 7745
 7746                                   ;;SET UP TO READ IN DATA PART OF MESSAGE
```

```
 CZDCLB DUP-11 DATA COMM. LINK TEST     MACY11 30A(1052)  20-JUL-83  13:19  PAGE 191
CZDCLB.P11    19-JUL-83 17:12                 RECEIVER PROTOCOL INTERRUPT ROUTINE

  7747  045122  042737  000003  037052          BIC     #BCCOK!BCCBAD,PRSTAT ;CLEAR FLAGS (USED IN PROTOCOL CODE)
  7748  045130  052737  000040  037140          BIS     #RXM,PRFLAG     ;SET DATA MESSAGE READ FLAG
  7749  045136  042737  000400  037140          BIC     #BCC,PRFLAG     ;CLEAR CRC CHECKED FLAG(USED BY THIS ROUTINE)
  7750  045144  042737  140000  002660          BIC     #BIT15!BIT14,RHDMCC ;CLEAR SELECT & QS BITS
  7751
  7752                                  ;:IS ALLOCATED BUFFER SPACE LARGE ENOUGH FOR MESSAGE?
  7753  045152  023727  002660  001000          CMP     RHDMCC,#512.    ;WILL MESSAGE FIT IN ALLOCATED BUFFER?
  7754  045160  003414                          BLE     10$             ;YES,BRANCH
  7755
  7756                                  ;:MESSAGE TOO LONG !! LOG ERROR
  7757  045162  105237  037100                  INCB    LBUFER          ;LOG LOCAL BUFFER ERROR
  7758  045166  152737  000002  037101          BISB    #MTLMSK,LBMASK  ;SET MESSAGE TOO LONG BIT
  7759  045174  112737  000020  037070          MOVB    #MESLONG,REANAK ;SET REASON FOR NAK
  7760  045202  152737  000010  037052          BISB    #SNAK,PRSTAT    ;SET SEND NAK FLAG
  7761  045210  000443                          BR      PRIN8           ;TURN OFF RX & EXIT
  7762
  7763                                  ;; IF A NEW BUFFER IS AVAILABLE
  7764                                  ;;SET BUFFER AND CHARACTER COUNT FOR MESSAGE
  7765  045212  005737  037120          10$:    TST     RXPRC           ;NEW BUFFER AVAILABLE ?
  7766  045216  001420                          BEQ     15$             ;YES,BRANCH
  7767  045220  105237  037100                  INCB    LBUFER          ;LOCAL BUFFER ERROR
  7768  045224  001003                          BNE     12$             ;OVERFLOW?
  7769  045226  012737  000377  037100          MOV     #377,LBUFER     ;LATCH A 255.
  7770  045234  152737  000001  037101  12$:    BISB    #BNAMSK,LBMASK  ;SET MASK
  7771  045242  112737  000010  037070          MOVB    #BUFFNA,REANAK  ;SET NAK REASON
  7772  045250  152737  000010  037052          BISB    #SNAK,PRSTAT    ;SET "SEND NAK FLAG"
  7773  045256  000412                          BR      PRIN7           ;EXIT
  7774
  7775  045260  013737  006470  011510  15$:    MOV     DVRXA,RMSGPT    ;MESSAGE BUFFER ADDRESS
  7776  045266  013737  002660  011512          MOV     RHDMCC,RMSGCC   ;CHARACTER COUNT OF MESSAGE
  7777  045274  013737  002660  006472          MOV     RHDMCC,DVRCC    ;TELL MAIN CODE HOW LARGE MESSAGE IS
  7778  045302  000413                          BR      PRINEX          ;EXIT
  7779
  7780                                  ;;MESSAGE COMPLETE
  7781  045304  052737  000004  037140  PRIN7:  BIS     #QRX,PRFLAG     ;SET MESSAGE COMPLETE FLAG(USED BY MAIN CODE)
  7782  045312  052737  000100  037052          BIS     #RXD,PRSTAT     ;MESSAGE COMPLETE(USED BY PROTOCOL MODULE)
  7783
  7784  045320  005037  037146  PRIN8:  CLR     TURNON          ;RX NOT ON
  7785  045324  042777  000120  144116          BIC     #RINTEN+RXENA,@RXCSR    ;TURN OFF RECEIVER
  7786
  7787  045332  012602                  PRINEX: MOV     (SP)+,R2        ;RESTORE R2
  7788  045334                                  ENDSRV
  7789  045334                                                                  L10022:
  7790  045334  000002                                                                 RTI
  7791
  7792
  7793
```

```
7794
7795
7796                                    .SBTTL  PROTOCOL TRANSMIT ROUTINE
7797
7798                                    ;++
7799                                    ;; FUNCTIONAL DESCRIPTION:
7800                                    ;;      THIS ROUTINE IS USED TO SETUP EITHER CONTROL MESSAGES OR
7801                                    ;;      DATA MESSAGES FOR TRANSMISSION.
7802                                    ;;      IF THE SEND ACK(SACK) IS SET AN 'ACK' MESSAGE WILL BE SETUP
7803                                    ;;      AND TRANSMITTED.
7804                                    ;;      IF THE SEND NAK(SNAK) IS SET A 'NAK' MESSAGE WILL BE SETUP
7805                                    ;;      AND TRANSMITTED.
7806                                    ;;      ELSE A DATA MESSAGE WILL BE SETUP AND SENT.
7807                                    ;;      IF THE NETWORK IS HALF-DUPLEX THEN REQUEST TO SEND(RTS) WILL
7808                                    ;;      BE ASSERTED BEFORE TRANSMISSION.
7809
7810
7811
7812  045336  013737  037052  037136  TXPROT: MOV     PRSTAT,IMPRSTAT ;SAVE A COPY OF FLAGS
7813  045344  032737  000100  006576          BIT     #PRORUN,PARAM   ;PROTOCOL RUNNING ?
7814  045352  001407                          BEQ     7$              ;NO,BRANCH
7815  045354  022737  000003  006570          CMP     #ACT,MODTYP     ;ACTIVE MODE?
7816  045362  001003                          BNE     7$              ;NO,BRANCH
7817  045364  005737  037126          5$:     TST     TXREADY         ;TRANSMITTER READY FOR MESSAGE ?
7818  045370  001775                          BEQ     5$              ;NO,BRANCH
7819
7820                                    ;;IF HALF DUPLEX OR MULTI-POINT LINK, WE NEED THE SELECT BIT
7821                                    ;;; BEFORE WE CAN SEND.
7822  045372  005737  037142          7$:     TST     HDXMTP          ;FULL DUPLEX AND PT TO PT ?
7823  045376  001406                          BEQ     8$              ;YES,BRANCH
7824  045400  005737  037134          6$:     TST     SELECT          ;OK TO SEND ?
7825  045404  001003                          BNE     8$              ;YES,BRANCH
7826  045406  004737  042104                  CALL    RXPROTO         ;GO WAIT ON SELECT BIT
7827  045412  000772                          BR      6$              ;TRY AGAIN
7828
7829                                    ;; DETERMINE WHAT TO SEND
7830  045414  013737  037136  037052  8$:     MOV     IMPRSTAT,PRSTAT ;RESTORE ORIGINAL FLAGS
7831  045422  113737  037065  002652          MOVB    TRIBN,HDMADR    ;SET TRIB ADDRESS
7832  045430  042737  001000  006602          BIC     #PAD,FLAG       ;THIS BIT USED IN TX INTER ROUTINE
7833  045436  005037  037126                  CLR     TXREADY         ;TRANSMITTER BUSY
7834  045442  005037  037134                  CLR     SELECT          ;IF HALF DUPLEX/MTP MODE
7835  045446  032737  000004  037052          BIT     #SACK,PRSTAT    ;SEND ACK ?
7836  045454  001021                          BNE     10$             ;YES,BRANCH
7837  045456  032737  000010  037052          BIT     #SNAK,PRSTAT    ;SEND NAK ?
7838  045464  001062                          BNE     50$             ;YES, BRANCH
7839  045466  032737  004000  037052          BIT     #SSTART,PRSTAT  ;SEND START ?
7840  045474  001106                          BNE     60$             ;YES,BRANCH
7841  045476  032737  002000  037052          BIT     #SSTACK,PRSTAT  ;SEND START ACKNOWLEDGE ?
7842  045504  001126                          BNE     70$             ;YES,BRANCH
7843  045506  032737  000020  037052          BIT     #SDATA,PRSTAT   ;SEND DATA MESSAGE ?
7844  045514  001151                          BNE     100$            ;YES,BRANCH
7845  045516  000000                          HALT                    ;FATAL ERROR
7846
7847
7848
7849                                    ;; SETUP TO SEND AN 'ACK'
```

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 7850  045520  052737  000020  006602  10$:    BIS     #TXM,FLAG         ;SEND HEADER ONLY(USED IN TX INTER. ROUTINE)
 7851  045526  112737  000005  002645          MOVB    #ENQ,HDMID        ;CONTROL MESSAGE
 7852  045534  012737  000001  002646          MOV     #ACK,HDMTYP       ;ACK CONTROL MESSAGE
 7853  045542  052737  140000  002646          BIS     #BIT15!BIT14,HDMTYP ;SET SELECT & QS FLAG
 7854  045550  005737  037142                  TST     HDXMTP            ;HALF DUPLEX OR MULTI - POINT
 7855  045554  001415                          BEQ     20$               ;NO,BRANCH
 7856  045556  005737  037122                  TST     TXPRC             ;ANY THING TO SENT ?
 7857  045562  001012                          BNE     20$               ;NO,BRANCH
 7858  045564  032737  000100  006576          BIT     #PRORUN,PARAM     ;PROTOCOL RUNNING?
 7859  045572  001406                          BEQ     20$               ;NO,BRANCH
 7860  045574  042737  100000  002646          BIC     #BIT15,HDMTYP     ;CLEAR SELECT BIT
 7861  045602  012737  000001  037134          MOV     #1,SELECT         ;WE HAVE SOMETHING TO SEND, SO KEEP THE LINE
 7862  045610  113737  037064  002650  20$:    MOVB    R,HDMREP          ;SET RESPONSE NUMBER
 7863  045616  105037  002651                  CLRB    HDMNUM            ;FILLER
 7864  045622  042737  000004  037052          BIC     #SACK,PRSTAT      ;CLEAR SEND ACK FLAG
 7865  045630  000526                          BR      200$              ;GO SEND IT
 7866
 7867
 7868                                  ;; SETUP TO SEND A 'NAK'
 7869  045632  052737  000020  006602  50$:    BIS     #TXM,FLAG         ;TELL TX INTERRUPT TO SEND HEADER ONLY
 7870  045640  112737  000005  002645          MOVB    #ENQ,HDMID        ;CONTROL MESSAGE
 7871  045646  012737  000002  002646          MOV     #NAK,HDMTYP       ;'NAK'
 7872  045654  113737  037070  002647          MOVB    REANAK,HDMTYP+1   ;REASON FOR NAK
 7873  045662  052737  140000  002646  55$:    BIS     #BIT15!BIT14,HDMTYP ;SET SELECT & QS FLAGS
 7874  045670  105037  002651                  CLRB    HDMNUM            ;FILLER
 7875  045674  113737  037064  002650          MOVB    R,HDMREP          ;LAST MESSAGE RECEIVED CORRECTLY
 7876  045702  042737  000010  037052          BIC     #SNAK,PRSTAT      ;CLEAR SEND NAK FLAG
 7877  045710  000476                          BR      200$              ;GO SEND IT
 7878
 7879
 7880                                  ;; SETUP TO SEND START MESSAGE
 7881  045712  052737  000020  006602  60$:    BIS     #TXM,FLAG         ;TELL TX INT. ROUTINE TO SEND HEADER ONLY
 7882  045720  112737  000005  002645          MOVB    #ENQ,HDMID        ;CONTROL MESSAGE
 7883  045726  012737  000006  002646          MOV     #STRT,HDMTYP      ;START MESSAGE
 7884  045734  052737  140000  002646          BIS     #BIT15!BIT14,HDMTYP ;SET SELECT & QS FLAGS
 7885  045742  105037  002650                  CLRB    HDMREP            ;FILLER
 7886  045746  105037  002651                  CLRB    HDMNUM            ;FILLER
 7887  045752  042737  004000  037052          BIC     #SSTART,PRSTAT    ;CLEAR SEND START FLAG
 7888  045760  000452                          BR      200$              ;GO SEND IT
 7889
 7890                                  ;; SETUP TO SEND STACK MESSAGE
 7891  045762  052737  000020  006602  70$:    BIS     #TXM,FLAG         ;TELL TX INT. TO SEND HEADER ONLY
 7892  045770  112737  000005  002645          MOVB    #ENQ,HDMID        ;CONTROL MESSAGE
 7893  045776  012737  000007  002646          MOV     #STACK,HDMTYP     ;START ACKNOWLEDGE MESSAGE
 7894  046004  052737  140000  002646          BIS     #BIT15!BIT14,HDMTYP     ;SET SELECT &QS FLAGS
 7895  046012  105037  002650                  CLRB    HDMREP            ;FILLER
 7896  046016  105037  002651                  CLRB    HDMNUM            ;FILLER
 7897  046022  012737  177777  037124          MOV     #-1,ASTRT         ;START HAS BEEN ACKNOWLEDGED
 7898  046030  042737  002000  037052          BIC     #SSTACK,PRSTAT    ;CLEAR SEND STACK FLAG
 7899  046036  000423                          BR      200$              ;GO SEND IT
 7900
 7901
 7902                                  ;; SETUP TO SEND DATA
 7903  046040  042737  000020  006602  100$:   BIC     #TXM,FLAG         ;TELL TX INTERRUPT TO SEND HEADER + DATA
 7904  046046  112737  000201  002645          MOVB    #SOH,HDMID        ;DATA MESSAGE
 7905  046054  013737  006456  002646          MOV     DVTCC,HDMCC       ;CHARACTERS COUNT
```

```
 7906  046062  052737  140000  002646          BIS     #BIT15!BIT14,HDMCC  ;SET SELECT & QS FLAGS
 7907  046070  113737  037064  002650          MOVB    R,HDMREP            ;LAST MESSAGE RECEIVED CORRECTLY
 7908  046076  113737  037062  002651          MOVB    T,HDMNUM            ;THIS MESSAGE NUMBER
 7909  046104  000400                          BR      200$                ;GO SEND IT
 7910
 7911                                  ;; GO SET 'REQUEST TO SEND'
 7912  046106  004737  036576          200$:   JSR     PC,CTSSR            ;GO SET REQUEST TO SEND
 7913  046112  052737  004000  037116          BIS     #FIRST,IMFLAG       ;TELL THE CTSSR SUBROUTINE TO SKIP DELAY
 7914
 7915                                  ;; SETUP TO TRANSMIT HEADER PORTION OF MESSAGE
 7916  046120  012737  002645  011500  210$:   MOV     #HDMID,MSGPTR       ;HEADER MESSAGE ADDRESS
 7917  046126  012737  000006  011502          MOV     #6,MSGCC            ;CHARACTER COUNT OF HEADER = 6
 7918  046134  012737  000020  011504          MOV     #20,SYNCC           ;NUMBER OF SYNCS TO TRANSMIT
 7919
 7920                                  ;; SEND THE DATA
 7921  046142  005737  006574                  TST     FHDPLX              ;FULL DUPLEX?
 7922  046146  001004                          BNE     215$                ;YES,BRANCH
 7923  046150  052777  000130  143300          BIS     #SEND!TINTEN!HDPLX,@TXCSR ;ENABLE FOR HALF DUPLEX
 7924  046156  000403                          BR      217$                ;
 7925
 7926  046160  052777  000120  143270  215$:   BIS     #SEND!#TINTEN,@TXCSR  ;TURN ON TRANSMITTER
 7927
 7928
 7929                                  ;;IF ACTIVE MODE, TURN ON TX AND GET OUT IN A HURRY
 7930                                  ;; NOTE: START UP SEQUENCE OPERATES LIKE HALF-DUPLEX
 7931
 7932  046166  005737  037142  217$:   TST     HDXMTP              ;FULL DUPLEX PT-PT?
 7933  046172  001005                  BNE     220$                ;NO,BRANCH
 7934  046174  022737  000003  006570          CMP     #ACT,MODTYP         ;ACTIVE MODE ?
 7935  046202  001001                          BNE     220$                ;NO,BRANCH
 7936  046204  000406                          BR      TXPREX              ;EXIT
 7937
 7938  046206                          220$:   BREAK
 7939  046206  104422                                                      TRAP    C$BRK
 7940  046210  005737  037126                  TST     TXREADY             ;TX FINISHED ?
 7941  046214  001774                          BEQ     220$                ;NO, BRANCH
 7942
 7943                                  ;; IF HALF-DUPLEX OR MULTI-POINT REQUEST TO SEND WILL BE DROPPED
 7944  046216  004737  037010          230$:   JSR     PC,CLRRTS           ;DROP RTS IF HALF DUPLEX
 7945
 7946  046222  000207                  TXPREX: RETURN                      ;WE ARE DONE !
 7947
 7948
 7949                                          .EVEN
 7950
 7951  046224                                  ENDTST
 7952  046224                                                      L10017:
 7953  046224  104401                                                      TRAP    C$ETST
 7954
 7955
 7956
 7957
```

```
                                .SBTTL  HARDWARE PARAMETER CODING SECTION


                                ;++
                                ; THE HARDWARE PARAMETER CODING SECTION CONTAINS MACROS
                                ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
                                ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
                                ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
                                ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
                                ; WITH THE OPERATOR.
                                ;--

046226                                  BGNHRD
046226  000030                                                          .WORD L10023-L$HARD/2
046230                                                                L$HARD::

                                .SBTTL          DEVICE INDEPENDENT SECTION

046230                                  GPRML   DPLX,0,1,YES
046230  000130                                                          .WORD   T$CODE
046232  046310                                                          .WORD   DPLX
046234  000001                                                          .WORD   1


                                .SBTTL          DEVICE DEPENDENT SECTION

046236                                  GPRMA   CSRADR,2,0,160000,177776,YES
046236  001031                                                          .WORD   T$CODE
046240  046341                                                          .WORD   CSRADR
046242  160000                                                          .WORD   T$LOLIM
046244  177776                                                          .WORD   T$HILIM
046246                                  GPRMA   VECTOR,4,0,300,776,YES
046246  002031                                                          .WORD   T$CODE
046250  046367                                                          .WORD   VECTOR
046252  000300                                                          .WORD   T$LOLIM
046254  000776                                                          .WORD   T$HILIM
046256                                  GPRML   RNODM,14,1,YES
046256  006130                                                          .WORD   T$CODE
046260  046422                                                          .WORD   RNODM
046262  000001                                                          .WORD   1
046264                                  XFERT   ENDHWL
046264  012024                                                          .WORD   T$CODE
046266                                  GPRML   PTPMLP,10,1,YES
046266  004130                                                          .WORD   T$CODE
046270  046446                                                          .WORD   PTPMLP
046272  000001                                                          .WORD   1
046274                                  XFERF   ENDHWL
046274  006044                                                          .WORD   T$CODE
046276                                  GPRMD   TRIBNQ,12,D,-1,1,255.,YES
046276  005052                                                          .WORD   T$CODE
046300  046504                                                          .WORD   TRIBNQ
046302  177777                                                          .WORD   -1
046304  000001                                                          .WORD   T$LOLIM
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```
 8014  046306  000377                                                          .WORD   T$HILIM
 8015  046310                        ENDHWL: ENDHRD
 8016                                                                          .EVEN
 8017  046310                                                          L10023:
 8018
 8019                                .NLIST  BEX

                                     ;DEVICE INDEPENDENT QUESTIONS

       046310  052506  046114  042040 DPLX:   .ASCIZ  /FULL DUPLEX OPERATION : /


                                     ;DEVICE DEPENDENT QUESTION

       046341     104  053105  041511 CSRADR: .ASCIZ  /DEVICE CSR ADDRESS : /
       046367     111  052116  051105 VECTOR: .ASCIZ  /INTERRUPT VECTOR ADDRESS: /
       046422  042522  047515  042524 RNODM:  .ASCIZ  /REMOTE NODE "ITEP":/
       046446  051511  052040  044510 PTPMLP: .ASCIZ  /IS THIS A MULTIPOINT NETWORK:/
       046504  042101  051104  051505 TRIBNO: .ASCIZ  /ADDRESS THIS STATION:/

                                     .LIST   BEX
 8020                                        .EVEN
 8021
 8022
```

```
 8023
 8024                           ;.SBTTL SOFTWARE PARAMETER CODING SECTION
 8025
 8026                           ;++
 8027                           ; THE SOFTWARE PARAMETER CODING SECTION CONTAINS MACROS
 8028                           ; THAT ARE USED BY THE SUPERVISOR TO BUILD P-TABLES.  THE
 8029                           ; MACROS ARE NOT EXECUTED AS MACHINE INSTRUCTIONS BUT ARE
 8030                           ; INTERPRETED BY THE SUPERVISOR AS DATA STRUCTURES.  THE
 8031                           ; MACROS ALLOW THE SUPERVISOR TO ESTABLISH COMMUNICATIONS
 8032                           ; WITH THE OPERATOR.
 8033                           ;--
 8034
 8035                           ;       BGNSFT
 8036
 8037
 8038
 8039                           ;       ENDSFT
 8040
 8041
 8042
 8043                           ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
 8044                           ; TEMPORARY PATCH AREA - FOR DEBUG PURPOSES
 8045                           ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;
 8046
 8047  046532                   $PATCH:
 8048  046532  000030                   .BLKW   30
 8049
 8050
 8051  046612                           LASTAD
 8052                                                                    .EVEN
 8053  046612  000000                                                    .WORD   0
 8054  046614  000000                                                    .WORD   0
 8055  046616                   L$LAST::
 8056  046616                           ENDMOD
 8057
 8058          000001           .END
```

```
A       037061          6745#   7295*   7396*   7465*
ABO   = 000026          2298#   4728
ABORT = 000200          2276#   4872    5616    7347
ACK   = 000001          6847#   7281    7852
ACT   = 000003          2249#   4854    5303    5383    5636    6998    7298    7475    7815    7934
ACTATV  031312          5077    5303#
ACTBCR  031116          5095    5265#
ACTCHK  031526          5057    5349#
ACTCLB  030440          5153    5167#
ACTCLP  031640          5091    5377#
ACTCLR  030130          5055    5108#
ACTCOP  030736          5065    5228#
ACTCRC  031542          5086    5355#
ACTCSE  030264          5060    5139#
ACTCST  030356          5061    5155#
ACTDLL  031360          5081    5317#
ACTDME  030664          5097    5208    5211#
ACTDMQ  030656          5098    5210#
ACTDMS  030634          5096    5205#
ACTDMX  030672          5212#
ACTECH  031436          5085    5333#
ACTEQO  031060          5069    5254#
ACTERR  021414          3526    3536#
ACTEXT  030214          5101    5127#
ACTFUL  021372          3527    3560#
ACTHLP  030150          5059    5114#
ACTLIS  031350          5080    5314#
ACTLLP  031650          5092    5379#
ACTLPX  031666          5374    5376    5378    5380    5383#
ACTLXX  031730          5347    5368    5371    5384    5393#
ACTMEX  031304          5247    5263    5285    5290    5295    5298    5300#
ACTME1  031240          5274    5276    5278    5280    5282    5289#
ACTMOP  031620          5080    5373#
ACTMOS  031550          5100    5358#
ACTMS0  031140          5070    5273#
ACTMS1  031146          5071    5275#
ACTMS2  031156          5072    5277#
ACTMS3  031166          5073    5279#
ACTMS4  031176          5074    5281#
ACTMS5  031206          5075    5283#
ACTMS6  031224          5076    5286#
ACTM2X  031406          5304    5312    5315    5318    5321    5325#
ACTNO   031426          5084    5330#
ACTNUF  030120          5094    5105#
ACTNUL  030126          5054    5106#
ACTNUM  030746          5066    5231#
ACTOPM  031040          5067    5249#
ACTPAS  031322          5078    5306#
ACTPRO  031556          5087    5361#
ACTPRT  030224          5099    5130#
ACTQFG  031562          5350    5353    5356    5359    5363#
ACTREC  031342          5079    5311#
ACTREX  021346          3524    3551#
ACTRHL  021302          3523    3536#
ACTRLG  021356          3525    3555#
ACTRLP  031660          5093    5381#
```

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 CZDCLB DUP-11 DATA COMM. LINK TEST     MACY11 30A(1052)  20-JUL-83  13:19  PAGE 200
CZDCLB.P11    19-JUL-83 17:12           CROSS REFERENCE TABLE -- USER SYMBOLS

ACTRNF  021272            3528    3532#
ACTRNL  021300            3522    3533#
ACTRPS  031610            5088    5370#
ACTRSO  021436            3529    3573#
ACTRUN  030240            5058    5134#
ACTSEX  031250            5102    5292#
ACTSHO  030140            5056    5111#
ACTSHW  030500            5145    5159    5178#   5197
ACTSTE  030700            5062    5218#
ACTSTS  031534            5068    5352#
ACTSTT  030710            5063    5221#
ACTSTX  030716            5219    5222#
ACTSZE  030726            5064    5225#
ACTTAL  031400            5083    5323#
ACTTLP  031630            5090    5375#
ACTTRA  031370            5082    5320#
ADDCC   023266            3969#   4986    5028
ADDC1   023362            3971    3986#
ADR   = 000020 G          2222#
ALCK    032336            2715    5535#
ALCK1   032460            5590    5600    5603#   5656
ALCK2   032524            5604    5613#   5688
ALCK2A  032774            5653    5658#
ALCK3   033020            5623    5660    5663#
ALCK3A  033112            5670    5676#
ALCK3B  033124            5677    5679#
ALCK3C  033120            5674    5678#   5685
ALCK4   033146            5664    5683#
ALCK4A  033154            5682    5686#
ALCK4B  033166            5687    5689#
ALCK5   032400            5589#   5678
ALLTR   032400            5467    5490    5514    5540    5588#
ASSEMB= 000010            1994
ASTRT   037124            6804#   6980*   7453    7897*
ATVMOD= 000027            2360#   2857
BAD     006555            2682#   3075    5764*
BADCHR= 000051            2378#   2953
BASM1   015507            3070#   3913
BASM2   015500            3070#   3932
BASM3   015471            3070#   3924
BCC   = 000400            2314#   6235    6238    6434    6452    6475    6590    7163    7720    7728    7749
BCCBAD= 000002            6857#   7214    7230    7724    7747
BCCOK = 000001            6856#   7214    7254    7436    7733    7747
BCCW    011514            3024#   6454    7730
BDCLK   014210            3070#   4599
BIT0  = 000001 G          2195#   2269    2302    3574    3645    6833    6836    6856
BIT00 = 000001 G          2184#   2195
BIT01 = 000002 G          2183#   2194
BIT02 = 000004 G          2182#   2193
BIT03 = 000010 G          2181#   2192
BIT04 = 000020 G          2180#   2191
BIT05 = 000040 G          2179#   2190
BIT06 = 000100 G          2178#   2189
BIT07 = 000200 G          2177#   2188
BIT08 = 000400 G          2176#   2187
BIT09 = 001000 G          2175#   2186
```

```
BIT1   = 000002 G          2194#   2270    2303    2412    3648    6834    6835    6857
BIT10  = 002000 G          2174#   2318    6864
BIT11  = 004000 G          2173#   2320    2406    2418    2422    6865
BIT12  = 010000 G          2172#   2403    2423    2430
BIT13  = 020000 G          2171#   2401
BIT14  = 040000 G          2170#   2405    7562    7750    7853    7873    7884    7894    7906
BIT15  = 100000 G          2169#   2428    2429    2431    7562    7739    7750    7853    7860    7873    7884    7894    7906
BIT2   = 000004 G          2193#   2271    2304    2404    3051    6832    6858
BIT3   = 000010 G          2192#   2272    2305    2413    6859
BIT4   = 000020 G          2191#   2273    2310    2414    2424    6860
BIT5   = 000040 G          2190#   2274    2312    2415
BIT6   = 000100 G          2189#   2275    2306    2416    2425    6861
BIT7   = 000200 G          2188#   2276    2307    2417    2421    5429    5432
BIT8   = 000400 G          2187#   2314    2419    2426    2432    6862
BIT9   = 001000 G          2186#   2316    2402    2420    2427    6113    6863
BLDBEX   023474            4030    4034#
BLDBUF   023364            4012#   4845    4852    4987    5029    5174    5441
BLDB1    023374            4017#
BLDB2    023436            4025#   4032
BLDB3    023454            4028#   4033
BNAMSK=  000001            6836#   7586    7770
BOE    = 000400 G          2226#
BUFEX    014355            3070#   4959    5000
BUFFNA=  000010            6824#   7581    7771
BUFLIM=  001000            2237#   2626    2627    2628    3970    3982    4101    4956    4997    5167    5437
BYTBIT   006514            2661#   3918    5206*   5210*
CABLE  = 000002            2256#   6082
CABLOP=  010000            2423#   6084
CBLLOP=  000045            2374#   2974
CCURAD   006452            2641#   4113*   4121    4125*   4841*   4849    5027    5032*   5152*
CHECK  = 000003            2340#   2905
CLEAR  = 000001            2338#   2843    4949    5108
CLIACT   027740            4907    5046#
CLIALN=  000007            2331#   2951
CLIALP=  000006            2330#   2891    2901    2956
CLIBCR   012025            3070#   5266
CLIBDL   011720            3070#   5388
CLIBIF=  000003            2327#
CLIBR  = 000002            2326#   2840    2842    2844    2847    2849    2858    2860    2862    2864    2866    2869    2871
                           2886    2888    2898    2906    2910    2912    2916    2918    2921    2924    2931    2933    2935
                           2937    2939    2941    2943    2945    2949    2952    2959    2961    2966    2973    2975    2977
                           2979    2984    3505
CLIBRX   011700            3070#   4358
CLIDEC=  000011            2333#   2965    2983
CLIERM   011603            3070#   3469    4913
CLIERR=  000000            2324#   2850    2953    3515
CLIEXI=  000001            2325#   2832    2834    2836    2838    2877    2879    2989    3497    3499    3501    3503    3508
                           3510    3514    3516
CLINBG   011656            3070#   4401
CLINPS   011762            3070#   5339
CLINUF   011633            3070#   3479    4922
CLINUM=  000005            2329#
CLIOCT=  000010            2332#   2893    2895    3513
CLIPW    012123            3070#   5405
CLIRAC   021234            3463    3517#
CLIRT    021032            3462    3494#
```

```
CLISEO  012072            3070#   5236
CLISPA= 000004            2328#   2830    2854    2875    2884    2892    2950    3495
CLISTR= 000012            2334#   2833    2835    2837    2839    2841    2843    2846    2848    2855    2857    2859    2861
                          2863    2865    2868    2870    2876    2878    2885    2887    2903    2905    2909    2911    2915
                          2917    2920    2923    2930    2932    2934    2936    2938    2940    2942    2944    2958    2960
                          2972    2974    2976    2978    3498    3500    3502    3504    3507    3509    3511
CLITRE  007714            2826#   4906
CLI$PM  011570            3070#   4900
CLI$RP  011576            3070#   3456
CLKBR   006624            2723#   4584*
CLKCSR  006622            2722#   3256*   3277*   4555    4573*   4574*   4575*   4585*   4720*   4808*
CLKEN   006632            2726#   3277    4563*   4576*   4585    4808
CLKHZ   006630            2725#   3259    3274    3411    4589    4607
CLKINT  017756 G          3254#   4658
CLKSET  017732            3209#   4562    4572
CLKVEC  006626            2724#   4553*   4583*   4659
CLRRTS  037010            6180    6334    6346    6615    6702#   7944
CMDBUF  002666            2563#   3454    3461    4898    4905
CMODS   011472            3015#   6403*   6404*   6405    6415    7677*   7678*   7679    7689
CMPBUF  005150            2628#   4099*   4113    4841    5151
CMPPTR  006444            2638#   4107*   4108*   4121*   4122*   4123*   4127*   4836*   4848    5011*   5025*   5026    5030*
                          5139*   5140    5149*   5150    5415*   5728
CMPSEX  033442            5726    5814#
CMPSR   033166            5675    5725#
CMPS1   033326            5757#   5775
CMPS2   033332            5760#
CMPS3   033220            5731#   5787
CMPS5   033430            5784#
CMPS5A  033434            5777    5785#
CMPS6   033376            5758    5762    5773#
CMPS7   033314            5746    5755#
CMPTOT  006446            2639#   4116*   4119    4128*   4853*   5009*   5012    5031*   5142    5146*   5402    5418
CMSG0 = 000020            2353#   2932
CMSG1 = 000021            2354#   2930
CMSG2 = 000022            2355#   2934
CMSG3 = 000023            2356#   2936
CMSG4 = 000024            2357#   2940
CMSG5 = 000025            2358#   2938
CMSG6 = 000026            2359#   2942
CONOTM  006550            2679#   3157
CONTIN  006552            2680#
CPTR    006524            2669#   4015    4019*   4844*   4848*   4984*   4988    5026*   5030    5150*   5163*   5439*   5466*
                          5486*   5511*   5536*   5605    5610*   562?    5679*   5686    5727*   5732    5736*   5982*
CPTRR   006522            2668#   5463*   5489*   5512*   5538*   559     5597*   5635*   5640    5649*   5662*   5683    5728*
                          5738    5741*   5930*
CR      016534            3070#   3395
CRC   = 000040            2369#
CRCB  = 000020            2273#   5355
CRCOK = 010000            2430#   6436    7722
CSHEXP= 000006            2343#   2876
CSHTRN= 000007            2344#   2878
CSRADR  046341            7989    8019#
CTOTCC  006450            2640#   4115*   4123    4125    4126*   4131*   4831*   4996    5007    5033*   5147*
CTS   = 020000            2401#   2749    6673
CTSSR   036576            6129    6140    6291    6600    6643#   7912
CTSS3   036646            6650    6658#
```

```
CTSS4   036624          6652#   6656
CTSS7   036706          6660    6663    6668#
CURADD  006526          2670#   4017    4022    4024    4034*   4843*   4849*   4985*   4990    5027*   5032    5168*   5438*
CURCC   006520          2667#   3969    3981    3984*   3985    4018    4023    4034    4839*   4851*   5170*   5243*   5256*
                        5284*   5287*   5289*   5437*
C$AU  = 000052          1994#   4788
C$AUTO= 000061          1994#   4709
C$BRK = 000022          1994#   6056    6111    6150    6314    6610    6654    6672    7199    7939
C$BSEG= 000004          1994#
C$BSUB= 000002          1994#
C$CEFG= 000045          1994#
C$CLCK= 000062          1994#   4558    4568
C$CLEA= 000012          1994#   4745
C$CLOS= 000035          1994#
C$CLP1= 000006          1994#
C$CVEC= 000036          1994#
C$DCLN= 000044          1994#   4526
C$DODU= 000051          1994#
C$DRPT= 000024          1994#
C$DU  = 000053          1994#   4766
C$EDIT= 000003          1994#   2058
C$ERDF= 000055          1994#
C$ERHR= 000056          1994#
C$ERRO= 000060          1994#
C$ERSF= 000054          1994#
C$ERSO= 000057          1994#   5749    5767    5780    5823    6067    6105    6173    6326    6444    6466    6686    7519
                        7537
C$ESCA= 000010          1994#
C$ESEG= 000005          1994#
C$ESUB= 000003          1994#
C$ETST= 000001          1994#   7953
C$EXIT= 000032          1994#   4685    4737    4886    4946
C$GETB= 000026          1994#
C$GETW= 000027          1994#
C$GMAN= 000043          1994#   3452    4587    4896    5908
C$GPHR= 000042          1994#   4622
C$GPLO= 000030          1994#
C$GPRI= 000040          1994#
C$INIT= 000011          1994#   4693
C$INLP= 000020          1994#
C$MANI= 000050          1994#   4880
C$MEM = 000031          1994#
C$MSG = 000023          1994#   3086    3099    3113    3127    3147    3167
C$OPEN= 000034          1994#
C$PNTB= 000014          1994#   3082    3095    3109    3123    3143    3163
C$PNTF= 000017          1994#   3398    3406    3444    3472    3482    3542    36      3916    3927    3935    3979    4361
                        4404    4602    4821    4863    4916    4925    4963    4970    5004    5020    5120    5193    5239
                        5269    5342    5391    5408    5878    5975    6002    7354
C$PNTS= 000016          1994#   3588    3623    3637    3666    3687    3710    3724    3737    3750    3758    3785    3799
                        3814    3829    3837    3857    3877    4178    4215
C$PNTX= 000015          1994#
C$QIO = 000377          1994#
C$RDBU= 000007          1994#   4580
C$REFG= 000047          1994#   4531    4536    4541    4547
C$RESE= 000033          1994#   4734
C$REVI= 000003          1994#   2057
```

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C$RFLA= 000021           1994#
C$RPT = 000025           1994#   4494
C$SEFG= 000046           1994#
C$SPRI= 000041           1994#   4683    4723
C$SVEC= 000037           1994#   4661    4671    4678    4870    6967
C$TPRI= 000013           1994#
DATABC= 000002           6822#   7444    7572    7577
DATAWO  006556           2683#   6541*   6543*   6545
DATCKB= 000002           2270#   4187    5349    5400    5485    5632    5681    5725    5902    5970
DCD   = 010000           2403#   2751    6662
DCK   = 000014           2291#   3352
DCLFLG  006564           2689#   4522    4524*   4944*
DDE   = 000022           2296#   3360
DER   = 000010           2289#   3338
DERIN   037076           6771#   7235*   7237*   7328*   7330*   7441*   7443*
DEROUT  037074           6765#   7565*   7567*   7574*   7576*
DEV1    007704           2806#   3743*   3754    3762*   3764*   4159    4873*   5198*
DEV2    007706           2807#   3744*   3753    3763*   3765*   4162    4874*   5199*
DEV3    007710           2808#   3766*   4169    4875*   5200*
DEV4    007712           2809#   3767*   4183    4187    4191    4196    4201    4876*   5201*
DFPTBL  002130 G         2123#
DIAGMC= 000000           1994
DIVN91  034772           6147#   6152
DLE   = 000020           2295#   3356
DLL     033570           2716    5873#
DLLCM   014130           3070#   5875
DLLMOD= 000033           2364#   2865
DMPE  = 000053           2380#   2895
DMPQ  = 000054           2381#   2897
DMPS  = 000052           2379#   2893    4938    5207
DMSGAD  002172           2458#   4026
DMSGCT  002150           2445#   4025
DOW   = 000004           2250#   5317    6087
DPLX    046310           7979    8019#
DPV   = 000000           2281#
DSCA  = 100000           2431#
DSITEN= 000040           2415#   6248    6596    7171
DSR   = 001000           2402#   2750
DTR   = 000002           2412#   6091    6668
DUMEX   023264           3938    3944#
DUMPSR  023130           3909#   4940
DUM1    023222           3919    3930#
DUM2    023244           3929    3937#
DUM3    023160           3918#   3942
DUM4    023134           3910#   3941
DUPPAR  011470           3008#   5429*   5432*   6115
DVEM0   016747           3070#   6061    6069
DVEM1   017026           3070#   6680    6688
DVEM2   017110           3070#   6320    6328    7531    7539
DVEM3   017205           3070#   6440    6446
DVEM4   017246           3070#   6460    6468
DVEM5   017313           3070#   6167    6175    7513    7521
DVEM6   017377           3070#   6099    6107
DVI   = 000012           2290#   3343
DVINEX  035130           6089    6117    6119    6121    6148    6160    6180#
DVINIT  034306           5435    6046#   6071    6178
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DVIN1    034404            6054    6075#
DVIN3    034440            6078    6082#
DVIN3A   034474            6088    6091#   6109
DVIN31   036432            6131    6156    6590#
DVIN32   036462            6600#   6620
DVIN34   036574            6612    6621#
DVIN35   036524            6609#   6614
DVIN36   036556            6617#   6618
DVIN37   034602            6080    6085    6115#
DVIN38   034510            6094#   6114
DVIN39   034562            6095    6110#
DVIN4    034702            6135#
DVIN41   034662            6130#   6138
DVIN8    035014            6136    6155#   6163
DVIN81   035056            6133    6153    6158    6167#
DVIN9    034722            6140#   6162
DVMEX    035160            6208#
DVMODS   035152            3375    6206#   6661*
DVRCC    006472            2651#   5596*   5625    5979*   5994    5996*   5997*   6241*   6478*   7777*
DVRCT    006474            2652#   5464*   5537*   5634*   5638*   5658*   5659    5729*   5786*
DVREX    035270            6234    6249#
DVRXA    006470            2650#   5594*   5624    5977*   5993    5996    6239    6476    7775
DVRXI    035556 G          4668    4867    6394#
DVRXQ    035170            5601    5988    6232#
DVRX2    035246            6237    6246#
DVRX3    035262            6242    6248#
DVTCC    006456            2644#   5609*   5666    5927*   5941    6296    6302    6553    7905
DVTCT    006460            2645#   5487*   5510*   5535*   5668*   5673    5676
DVTREX   035554            6336    6342    6347#
DVTR1    035346            6293    6300#
DVTR2    035376            6297    6304#
DVTR3    035412            6289    6311#   6330
DVTR4    035520            6333    6338#
DVTR5    037050            6706    6711#
DVTR8    035420            6313#   6339    6345
DVTXA    006454            2643#   5607*   5665    5924*   5940    6295    6552
DVTXI    036230 G          4675    6525#
DVTXRX   035272            5620    5935    5990    6288#
DVTXR1   037006            6674    6691#
DVTXR2   036722            6671#   6676
DVTXR3   036606            6649#   6690
DVTXR4   036742            6665    6680#
DVTXR9   037006            6645    6692#
ECHO   = 000037            2368#   2911
ECHOB  = 000004            2271#   4191    5325    5335    5345    5627
EDABO    015460            2780    3070#
EDDCK    015252            2775    3070#
EDDDE    015365            2778    3070#   5769    5782
EDDER    015235            2773    3070#
EDDLE    015330            2777    3070#   5751
EDDVI    015302            2774    3070#
EDEOP    015420            2779    3070#
EDMOS    015434            2776    3070#
EDRXC    015207            2772    3070#
EDRXQ    015162            2771    3070#
EDTXC    015133            2770    3070#
```

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EDTXQ   015107            2769    3070#
EFM11   014707            3070#   3106
EFM13   015036            3070#   3120
EFM2    014612            3070#   3092
EF.CON= 000036 G          2202#   4540
EF.NEW= 000035 G          2203#   4546
EF.PWR= 000034 G          2204#
EF.RES= 000037 G          2201#   4535
EF.STA= 000040 G          2200#   4530
EMSG0   002215            2446    2470#
EMSG1   002216            2447    2472#
EMSG2   002217            2448    2474#
EMSG3   002220            2449    2476#
EMSG4   002320            2450    2490#
EMSG5   002412            2451    2504#
EMSG6   002513            2452    2518#
EMSG8   002643            2454    2532#
ENADD   006512            2660#   3937    5211*
ENDEVT  023006            3689    3699    3703    3844#
ENDHWL  046310            8002    8008    8015#
ENDIT   026120            4544    4652    4655#
ENDPS   033502            5817    5847#
ENDQQ = 000017            2352#   2948
ENQ   = 000005            6842#   7209    7263    7851    7870    7882    7892
EOP   = 000024            2297#   3364
ERRCNT  006506            2658#   3374    3377    4731    5424*   5747*   5765*   5778*   5821*   5851    6065*   6103*   6171*
                          6324*   6442*   6464*   6684*   7517*   7535*
ERREXT  044506            7525    7544    7569    7578    7587    7596    7605    7614    7620    7625    7629    7633#
ERRPRC  043732            7204    7218    7225    7238    7274    7332    7374    7423    7431    7445    7505#
ERR1    017464 G          3072#   5770
ERR10   017554 G          3102#   5752
ERR13   017636 G          3136#   6070    6108    6176    6329    6447    6469    6689    7522    7540
ERR14   017670 G          3155#
ERR2    017526 G          3089#   5783
ERR4    017604 G          3116#   5826
ERX   = 000100            2306#   5465    5513    5539    5654    5672    5981    6335
ETX   = 000200            2307#   5488    5539    5655    5671    5929    5947    6341
EVL   = 000004 G          2220#
EVMCTS  016502            2759    3070#
EVMDCD  016512            2761    3070#
EVMDSR  016506            2760    3070#
EVMOCG  016365            3070#   3834
EVMOHD  016410            3070#   3854
EVMOST  016465            3070#   3874
EVMRI   016522            2763    3070#
EVMRTS  016516            2762    3070#
EVMSRD  016526            2764    3070#
EVTADD  007646            2787#   3728*   3733    3775*   3781    3789*   3795    3804*   3810
EVTBCT  007650            2788#   3729*   3732    3776*   3780    3790*   3794    3805*   3809
EVTEND  007554            2739#   3419    3696    4611
EVTF0   015555            3070#   3707
EVTF1   015651            3070#   3721
EVTF2   015700            3070#   3734
EVTF3   015752            3070#   3747    3826
EVTF3C  015764            3070#   3140    3755
EVTF3D  016001            3070#   3160
```

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EVTF4   016023          3070#   3796
EVTF4A  016125          3070#   3811
EVTF4B  016223          3070#   3782
EVTF5A  016302          3070#   3079
EVTLOG  006652          2737    2738#   3423    3681    3694    4608
EVTLST  007610          2769#   3717
EVTMIN  007642          2785#   3715*   3720
EVTPTR  006650          2737#   3409    3424*   3680    3701    4609*
EVTSEC  007640          2784#   3714*   3719
EVTTCK  007644          2786#   3713*   3718
EVTTMP  007652          2789#   3742*   3746    3777*   3779    3791*   3793    3806*   3808    3823*   3825
EXIT  = 000057          2384#   2837    4724    4942    5127
EXITCL  026316          4725    4733#
E$END = 002100          1994#
E$LOAD= 000035          1994#   2081
FACSIM  023510          4095#   5296
FHDPLX  006574          2697#   4627*   6118    6659    6705    6970    7048    7302    7921
FIR     037254          3560*   3566*   3580*   3605    6917#
FIRST = 004000          2320#   6649    6657    7673    7913
FLAG    006602          2709#   5421*   5465*   5488*   5513*   5539*   5589    5603    5622    5654*   5655*   5661*   5663
                        5671*   5672*   5680*   5929*   5937*   5947*   5981*   6075*   6127*   6141*   6147    6181*   6182*
                        6233    6235*   6238*   6288    6290*   6294*   6332    6335    6338    6341    6344    6399    6434
                        6452*   6472    6474*   6475*   6481*   6532    6537*   6549    6551*   6555*   6590*   6601*   6613
                        6619    6649    6657*   6953    7122*   7832*   7850*   7869*   7881*   7891*   7903*
FMTMSK= 000002          6834#   7613
FORMER= 000021          6827#   7373    7608
F$AU  = 000015          1994#   4776    4787
F$AUTO= 000020          1994#   4704    4708
F$BGN = 000040          1994#   1996    3072    3089    3102    3116    3136    3155    3172    3254    4483    4503    4519
                        4685    4704    4718    4737    4754    4760    4776    4782    4803    4886    4946    6394    6525
                        7666    7952    7971    8057
F$CLEA= 000007          1994#   4718    4744
F$DU  = 000016          1994#   4754    4765
F$END = 000041          1994#   1996    3087    3100    3114    3128    3148    3168    3170    3281    4495    4685    4694
                        4710    4737    4746    4758    4767    4780    4789    4803    4886    4946    6489    6561    7791
                        7952    7954    8018    8057
F$HARD= 000004          1994#   7971    8002    8008    8016
F$HW  = 000013          1994#   2121    2149
F$INIT= 000006          1994#   4519    4692
F$JMP = 000050          1994#   3170    4685    4737    4758    4780    4886    4946
F$MOD = 000000          1994#   1996    8057
F$MSG = 000011          1994#   3072    3085    3089    3098    3102    3112    3116    3126    3136    3146    3155    3166
F$PROT= 000021          1994#   4503    4510
F$PWR = 000017          1994#
F$RPT = 000012          1994#   4483    4493
F$SEG = 000003          1994#
F$SOFT= 000005          1994#
F$SRV = 000010          1994#   3254    3279    6394    6487    6525    6559    7666    7789
F$SUB = 000002          1994#
F$SW  = 000014          1994#
F$TEST= 000001          1994#   4804    7952
GETCL   026764          4882    4893#   4918    4927    4930    4932    4934    4941    4950    4952    4965    4980    4994
                        5006    5022    5036    5410
GETPRM  025714          4550    4616#   4625
GETRCL  020640          3447#   3474    3484    3488
GLINC   044632          7682    7686#
```

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GLMSG   016671          3070#   6413    7687
GLOBCC  037067          6756#   7256*
GOOD    006554          2681#   3077    5763*
GTRA2   026350          4811#
GTRA3   026412          4814    4824#
GTRA4   026420          4829#
GTRA5   026644          4825    4865#   5618    5860    5880
GTREX   032040          5421#
GTRX2   032142          5437#   5858    5949    6009
GTR9    031736          4889    4937    5398#
GTXRXB  026350          4810#
G$CNTO= 000200          1994#
G$DELM= 000372          1994#
G$DISP= 000003          1994#
G$EXCP= 000400          1994#
G$HILI= 000002          1994#
G$LOLI= 000001          1994#
G$NO  = 000000          1994#   3455    4899    5911
G$OFFS= 000400          1994#   3455    4590    4899    5911    7978    7988    7993    7998    8004    8010
G$OFSI= 000376          1994#   3455    4590    4899    5911    7978    7988    7993    7998    8004    8010
G$PRMA= 000001          1994#   7988    7993
G$PRMD= 000002          1994#   3455    4590    4899    5911    8010
G$PRML= 000000          1994#   7978    7998    8004
G$RADA= 000140          1994#   3455    4899    5911
G$RADB= 000000          1994#
G$RADD= 000040          1994#   4590    8010
G$RADL= 000120          1994#   7978    7998    8004
G$RADO= 000020          1994#   7988    7993
G$XFER= 000004          1994#   8002    8008
G$YES = 000010          1994#   4590    7978    7988    7993    7998    8004    8010
HDMADR  002652          2546#   7831*
HDMC    002654          2549#   6144    6247    6303    6593    6603    7166
HDMCC   002646          2543#   6130*   6142*   6155*   6169    6302*   7515    7905*   7906*
HDMID   002645          2541#   7851*   7870*   7882*   7892*   7904*   7916
HDMNUM  002651          2545#   7863*   7874*   7886*   7896*   7908*
HDMREP  002650          2544#   7862*   7875*   7885*   7895*   7907*
HDMSG   002644          2540#   6126*   6143    6300*   6301    6602
HDMTYP  002646          2542#   7852*   7853*   7860*   7871*   7872*   7873*   7883*   7884*   7893*   7894*
HDPLX = 000010          2413#   7923
HDXMTP  037142          6811#   6969*   6974*   6994    7289    7473    7822    7854    7932
HEADBC= 000001          6821#   7233    7234    7563    7568
HELP  = 000000             1#   1994    2008    2099    2111    2125    2153    2157    2164    3028    3051    3065    3070
                        3181    4485    4489    4491    4511    4521    4688    4706    4720    4740    4756    4761    4778
                        4783    4800    4801    4805    6713    7955    7974    8022    8037    8042    8050
HELPDC= 000000             1#   2010    2134    2152    2280    2293    2309    2395    2409    2990    3029    3044    3070
                        3130    3368    3677    3821    4629    4666    5872    6014    6019    6188    6213    6253    6351
                        6356    6490    7983    8019
HLP   = 000005          2342#   2831    2833    4931    5124
HLPEND  003036          2576#   5122
HLPF    012271          3070#   3539    5117
HLPTAB  003016          2568#   5114
HLP0    012213          3070#   4860
HLP1    012276          2568    3070#
HLP2    012311          2569    3070#
HLP3    012426          2570    3070#
HLP3A   012513          2571    3070#
```

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L$HW    002130 G        2000    2086    2087#
L$ICP   002104 G        2049#
L$INIT  025352 G        2050    4484#
L$LADP  002026 G        2003#
L$LAST  046616 G        2004    8001#
L$LOAD  002100 G        2045#
L$LUN   002074 G        2041#
L$MREV  002050 G        2021#
L$NAME  002000 G        1978#
L$PRIO  002042 G        2015#
L$PROT  025344 G        2056    4468#
L$PRT   002112 G        2055#
L$REPP  002062 G        2031#
L$REV   002010 G        1987#
L$RPT   025336 G        2032    4448#
L$SPC   002056 G        2027#
L$SPCP  002020 G        1997#
L$SPTP  002024 G        2001#
L$STA   002030 G        2005#
L$TEST  002114 G        2057#
L$TIML  002014 G        1993#
L$UNIT  002012 G        1991#   4582
L10000  002150          2086    2114#
L10001  017524          3050#
L10002  017552          3063#
L10003  017602          3077#
L10004  017634          3091#
L10005  017666          3111#
L10006  017724          3131#   3136
L10007  020076          3244#
L10010  025342          4458#
L10012  026234          4651    4657#
L10013  026236          4673#
L10014  026324          4703    4709#
L10015  026332          4724    4730#
L10016  026340          4746    4752#
L10017  046224          4852    4912    7899#
L10020  036226          6451#
L10021  036430          6523#
L10022  045334          7737#
L10023  046310          7918    7964#
L5060   014072          3035#   4556
MAINT = 000144          6800#
MCREP   033456          5779    5785#
MES     037256          3571*   3585    3599    3628    6876#
MESDAT  037260          3572*   3584    3596    3598    3610    3613    3616    3627    6877#
MESLON= 000020          6785#   7548    7707
MGLCNT  011516          2990#   3083    5389*   5778    5791*   6376*   7634*
MHRCNT  011520          2991#   3084    5390*   5780    5792*   6373*   7631*
MLTYP   006572          2659#   3310    4820*   4839    4853*   5164    5272*   5291*   ;7*   5339*   5341*   5343*   5345*
                        5350*   5362    6041    6046    6606
MOBITE  007574          2720#   3836
MOBITS  007560          2714#   3824
MOCHK = 000010          2237#   4166    5322    6361    7122    7617
MODE    006604          2677#   5408
MODES   003102          2564#   4126
```

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MODLOC= 000003           2222#
MODREM= 000004           2223#
MODS    007556           2708#   3346    6170*   6172*   6370    6379*   6625    7628    7637*
MODTYP  006570           2656#   3309    4819*   4838    5163    5267*   5270*   5275*   5278*   5281*   5284*   5287*   5300
                         5347    5406    5600    5616    5633    5912*   5972*   6051    6954    7250    7425    7762    7881
MOMSGS  007574           2724#   3825
MOP   = 000043           2224#   2337#
MOSC  = 000056           2348#   2885
MO0     013632           2564    3035#
MO1     013642           2565    3035#
MO2     013653           2566    3035#
MO3     013663           2567    3035#
MO4     013672           2568    3035#
MO5     013707           2569    3035#
MO6     013714           2570    3035#
MPPTP   037132           4614*   6665    6767#   6928    6939
MSC   = 000016           2258#   3335
MSCMS   014764           3035#   5789
MSGCC   011502           2984#   6108*   6260*   6267*   6503    6510*   6517*   6567*   7864*
MSGLIM= 000017           2204#   2594    2595    2596    4069    4936    4978
MSGPTR  011500           2983#   6107*   6259*   6265*   6506    6508*   6516*   6566*   7863*
MSGTRN  014373           3035#   4925    4940    4966    4982
MSGTRU  014424           3035#   3941
MSGTYP  006516           2630#   3985    4803*   4815*   5134*   5213*   5237*   5239*   5241*   5243*   5245*   5247*   5250*
                         5404*
MSG0    002214           2411    2424    2434#
MSG0C   002150           2411#
MSG1    002215           2412    2425    2436#
MSG1C   002152           2412#
MSG2    002216           2413    2426    2438#
MSG2C   002154           2413#
MSG3    002217           2414    2427    2440#
MSG3C   002156           2414#
MSG4    002220           2415    2428    2442#
MSG4C   002160           2415#
MSG5    002320           2416    2429    2456#
MSG5C   002162           2416#   4804    4816    5135    5248
MSG6    002412           2417    2430    2470#
MSG6C   002164           2417#   5251
MSG8    002642           2419    2432    2496#
MSG8C   002170           2419#
MTLMSK= 000002           6794#   7553    7706
MYDATA= 001000           6822#   7119    7201    7338    7355    7659    7684
N       037060           6704#   7245*   7344*   7413*
NAK   = 000002           6807#   7221    7818
NAKRX = 000400           6821#   7226    7497
NEW     025706           4514    4579#   4583
NO    = 000036           2332#   2868    5294    5297    5328
NOCLK   014234           3035#   4783
NOD0    007714           2795#
NOD1    007720           2796#
NOD10   007776           2803#
NOD100  010624           2875#
NOD101  010630           2876#
NOD102  010644           2877#
NOD103  010650           2879#
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NOD104  010654            2880#
NOD105  010672            2881#
NOD106  010676            2882#
NOD107  010710            2883#
NOD11   010000            2804#
NOD110  010714            2885#
NOD111  010730            2886#
NOD112  010734            2888#
NOD113  010750            2889#
NOD114  010754            2892#
NOD115  010760            2895#
NOD116  010774            2896#
NOD117  011000            2897#
NOD12   010012            2805#
NOD120  011016            2898#
NOD121  011022            2899#
NOD122  011036            2900#
NOD123  011042            2901#
NOD124  011056            2902#
NOD125  011062            2903#
NOD126  011076            2904#
NOD127  011102            2905#
NOD13   010016            2806#
NOD130  011116            2906#
NOD131  011122            2907#
NOD132  011136            2908#
NOD133  011142            2909#
NOD134  011162            2910#
NOD135  011166            2912#
NOD136  011172            2913#
NOD137  011176            2914#
NOD14   010032            2807#
NOD140  011202            2915#
NOD141  011206            2916#
NOD142  011212            2917#
NOD143  011216            2918#
NOD144  011220            2921#
NOD145  011224            2922#
NOD146  011230            2923#
NOD147  011244            2924#
NOD15   010036            2808#
NOD150  011250            2925#
NOD151  011264            2926#
NOD152  011270            2929#
NOD153  011274            2930#
NOD154  011300            2931#
NOD155  011304            2934#
NOD156  011310            2937#
NOD157  011332            2938#
NOD16   010052            2809#
NOD160  011336            2939#
NOD161  011352            2940#
NOD162  011356            2941#
NOD163  011400            2942#
NOD164  011404            2943#
NOD165  011426            2944#
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NOD166  011432            2947#
NOD167  011436            2948#
NOD17   010056            2810#
NOD170  011442            2949#
NOD171  011446            2954#
NOD172  021032            3460#
NOD173  021036            3461#
NOD174  021042            3462#
NOD175  021044            3463#
NOD176  021060            3464#
NOD177  021062            3465#
NOD2    007724            2797#
NOD20   010062            2811#
NOD200  021076            3466#
NOD201  021100            3467#
NOD202  021112            3468#
NOD203  021114            3469#
NOD204  021134            3470#
NOD205  021140            3471#
NOD206  021144            3472#
NOD207  021160            3473#
NOD21   010074            2812#
NOD210  021162            3474#
NOD211  021176            3475#
NOD212  021200            3476#
NOD213  021216            3477#
NOD214  021222            3478#
NOD215  021226            3479#
NOD216  021230            3480#
NOD217  021232            3481#
NOD22   010100            2813#
NOD23   010112            2814#
NOD24   010116            2815#
NOD25   010120            2819#
NOD26   010124            2820#
NOD27   010140            2821#
NOD3    007726            2798#
NOD30   010144            2822#
NOD31   010162            2823#
NOD32   010166            2824#
NOD33   010204            2825#
NOD34   010210            2826#
NOD35   010226            2827#
NOD36   010232            2828#
NOD37   010250            2829#
NOD4    007742            2799#
NOD40   010254            2830#
NOD41   010300            2831#
NOD42   010304            2832#
NOD43   010310            2833#
NOD44   010326            2834#
NOD45   010332            2835#
NOD46   010344            2836#
NOD47   010350            2840#
NOD5    007744            2800#
NOD50   010354            2841#
```

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NOD51   010376           2842#
NOD52   010400           2843#
NOD53   010424           2844#
NOD54   010426           2849#
NOD55   010432           2850#
NOD56   010450           2851#
NOD57   010454           2852#
NOD6    007760           2801#
NOD60   010474           2853#
NOD61   010500           2856#
NOD62   010504           2857#
NOD63   010510           2858#
NOD64   010514           2859#
NOD65   010520           2860#
NOD66   010524           2861#
NOD67   010530           2862#
NOD7    007762           2802#
NOD70   010534           2863#
NOD71   010540           2866#
NOD72   010544           2867#
NOD73   010550           2868#
NOD74   010562           2869#
NOD75   010566           2870#
NOD76   010602           2871#
NOD77   010606           2874#
NONE  = 000000           2219#
NOTNUF= 000050           2342#   2806    2809    2810    2820    2859    2861    2867    2922
NULEVT  015515           3035#   3649
NULL  = 000000           2302#
NUM   = 000014           2314#   2930
N10$    007720           2795#
N100$   010350           2809    2812    2839#
N102$   010354           2840#
N104$   010400           2841    2842#
N110$   010426           2814    2848#
N111$   010432           2849#
N112$   010454           2850    2851#
N114$   010544           2866#
N115$   010540           2823    2825    2827    2829    2831    2834    2836    2865#   2871    2875    2877    2881    2886
                         2938    2940    2942    2944    2949
N116$   010562           2868#
N117$   010606           2869    2870    2873#
N118$   010630           2874    2875#
N119$   010650           2876    2878#
N120$   010754           2851    2853    2891#
N121$   011220           2896    2898    2900    2902    2904    2906    2908    2914    2920#   2931
N122$   011250           2923    2924#
N123$   011224           2921#
N125$   011446           2859    2861    2863    2867    2910    2922    2953#
N126$   011270           2924    2926    2928#
N130$   010676           2880    2881#
N131$   010734           2885    2887#
N132$   010714           2879    2884#
N140$   011304           2889    2933#
N141$   011310           2936#
N142$   011336           2937    2938#
```

```
N143$   011356            2939    2940#
N144$   011404            2941    2942#
N150$   011432            2883    2946#
N20$    010056            2808    2809#
N25$    010100            2811    2812#
N30$    010116            2810    2813    2814#   2819    2820    2821    2832    2835    2840    2843    2849    2852    2858
                          2860    2862    2882    2888    2892    2912    2925    2929    2930    2934    2943    2947    2948
N40$    010036            2806    2807#
N42$    007726            2796    2797#
N43$    007744            2798    2799#
N44$    007762            2800    2801#
N45$    010000            2802    2803#
N46$    010016            2804    2805#
N50$    010500            2807    2855#
N51$    010504            2856#
N52$    010510            2857#
N60$    010760            2894#
N61$    011000            2895    2896#
N62$    011022            2897    2898#
N63$    011042            2899    2900#
N64$    011062            2901    2902#
N65$    011102            2903    2904#
N66$    011122            2905    2906#
N67$    011142            2907    2908#
N68$    011166            2909    2911#
N70$    011172            2912#   2917
N71$    011202            2913    2914#
N72$    011206            2915#
N73$    011216            2916    2917#
N80$    010120            2805    2818#
N81$    010124            2819#
N82$    010166            2822    2823#
N83$    010210            2824    2825#
N84$    010232            2826    2827#
N85$    010254            2828    2829#
N86$    010304            2830    2831#
N87$    010332            2833    2834#
OFSET   006532            2637#   3043    5720*   5737*
OPBFPT  002514            2489#   5963
OPBUF   002520            2431    2490#   5223    5867    5874    5882    5888    5889    5907    5909    5941    5942    5968
                          5970
OPCNT   002166            2418#   5221*   5886*   5890    5891
OPEND   002642            2491#   5869
OPRAM   014065            3035#   5876
OPRMSG= 000015            2315#   2912
OPVAR   006502            2621#   4694    5386*   5813    6141*   7472*
OTINT = 000002            2268#
OUTMAS  037075            6726#   7517*   7526*
OUTVEC  011464            2969#   4610*   4611*   4641
O$APTS= 000000            1959#   2005
O$AU  = 000001            1959#   1972#   2037
O$BGNR= 000001            1959#   1972#   2031
O$BGNS= 000000            1959#   1997
O$DU  = 000001            1959#   1972#   2039
O$ERRT= 000000            1959#   2047
O$GNSW= 000000            1959#   2001
```

```
O$POIN= 000001           1959#   1972#   2063
O$SETU= 000000           1959#   1991    7999
PAD   = 001000           2281#   6105    6254    6496    6519    6565    7779
PARAM   006576           2663#   3312    3351    3561    4822*   4837*   4841    5166    5299*   5299*   5309*   5327*   5330*
                         5364    5449*   5563    5577    5580    5591    5596    5645    5689    5866*   5897    5934*   5949
                         6084    6361    6914    6944    7122    7223    7235    7237*   7265    7291    7298*   7317*   7401
                         7408*   7456    7617    7760    7805
PARCSR  011452           2962#   4600*   4601*   6079*
PAS   = 000002           2213#   5270    5300    5616    5633
PASC  = 000042           2336#   2948
PASMOD= 000030           2326#   2824
PCADD   006562           2653#
PCK     014014           3035#   4151
PCLKCT= 001600           2230#   4539
PCLKEN= 000111           2229#   4541
PCPM    014655           3035#
PEC     014024           3035#   4155
PLCK    032302           2679    5473#
PLCK2   032302           5474#
PLCK3   032316           5476#
PMS     014033           3035#   4165
PNCK    014012           3035#   4154
PNEC    014022           3035#   4158
PNMS    014031           3035#   4168
PNPR    014041           3035#   4163
PNST    014001           3035#   4150
PNT   = 001000 G         2192#
PPR     014043           3035#   4160
PRFLAG  037140           6770#   7118*   7165*   7603    7676*   7691    7696*   7697*   7729*
PRI   = 002000 G         2193#
PRIBB   021670           3594#   6860    6861    6862    6863    6864    6865
PRIBS   021726           3607#   6866    6867    6868    6869    6870    6871
PRINEX  045332           7643    7667    7679    7726    7735#
PRIN1   044644           7633    7636#
PRIN2   044572           7627#
PRIN21  044656           7618    7620    7622    7624    7641#
PRIN4   044740           7646    7659#
PRIN5   045046           7671    7681#
PRIN6   045022           7669    7676#
PRIN7   045304           7692    7721    7729#
PRIN8   045320           7653    7673    7709    7732#
PRIW    021642           3583#   6857    6858    6859    6872
PRI00 = 000000 G         2181#   4647
PRI01 = 000040 G         2180#
PRI02 = 000100 G         2179#
PRI03 = 000140 G         2178#
PRI04 = 000200 G         2177#
PRI05 = 000240 G         2176#   4632    4639    4831    6919
PRI06 = 000300 G         2175#
PRI07 = 000340 G         2016    2174#   4687
PRNT  = 000055           2347#   2800    4898    5095
PROEND  037114           6760#   7099
PROFDX  041526           7005    7041#
PROHDX  041334           6951    7003#
PROINT  041734           6938    7095#
PRORUN= 000100           2240#   4837    6914    6944    7223    7235    7237    7265    7291    7317    7401    7408    7456
```

```
                    7760    7805
PROTEX  041674      6972    6978    6998    7024    7037    7072#
PROTO = 000041      2335#   2880
PROTOB= 000040      2239#   3561    4161    5325    5563    5577    5897    5949    6084
PROTOC  040706      5579    5902*   5956*   6909#
PRRXI   044510 G    6920    7614#
PRSTAT  037052      3572    6688#   6937*   6941*   6961*   6984*   7013*   7031*   7064*   7097    7116*   7119*   7168
                    7176    7183    7185*   7201*   7202    7207    7226*   7228*   7270*   7278*   7293*   7315*   7322*
                    7338*   7355*   7356    7362*   7367    7377    7386    7390*   7418*   7497    7568    7649*   7659
                    7672*   7681*   7684*   7695*   7708*   7720*   7730*   7759    7777*   7782    7784    7786    7788
                    7790    7811*   7823*   7834*   7845*
PRTEMP  037144      6772#
PRUN    037130      6766#   6935*   6946*   7421
PSCNT   006504      2622#   4695    5387*   5811*   5814
PST     014003      3035#   4147
PTPMLP  046446      7952    7966#
PTREND  006434      2597#
PTRTAB  006150      2594#   4072    4077    4797    4934    5120    5127    5378
PTR13   006244      2595#   4801    4976    5104    5114    5379
PTR23   006340      2596#   5380
P$ACT   003136      2582#   3428*   4249    4872*
P$BUFA  003132      2580#   3426*   4204    4870*
P$CNT   003140      2583#   4346*   4353    4415*   4422*   4427
P$EXIT  024364      4207    4242#   4266    4271
P$GDBD  003147      2587#   3412*   3431    3555*   4264*   4269*   4277    4328*   4371*   4858*   4875    5205*   5258*
                    5308*   5349*
P$NNUF  003146      2586#   3413*   3441    3497*   3538*   4859*   4884    5070*   5100*   5108*   5122*   5177*   5264*
                    5271*   5290*   5357*
P$NUM   003142      2584#   3539    3541    3543    3545    3546    4341*   4344*   4346    4347*   4349*   4353*   4355*
                    4361*   5170    5176    5197    5207    5209    5334
P$RADX  003144      2585#   4301*   4304*   4311*   4318    4351    4359
P$TREE  003134      2581#   3427*   4205    4871*
P$TRV   024246      3430    4203#   4874
P$TR5   024256      4206#   4215    4235    4240
QCOPY = 000013      2313#   2925    5192
QRX   = 000004      2269#   5429    5477    5503    5553    5586    5618    5625    5636    5945    6197    6199    6302
                    6445    6554    6583    6970    7022    7046    7118    7729
QTX   = 000010      2270#   5452    5503    5567    5619    5627    5635    5644    5893    5911    6105    6111    6252
                    6254    6296    6308    6501    6565    6577    6959    7006    7041
QUALFG  003012      2531#   3429*   4873*   5189*   5192*   5195    5294*   5297    5310*   5328    5331*
QUALVL  003014      2532#   4957*   4999*   5186*   5209*   5210*
R       037064      6712#   7268    7351*   7352    7354*   7809    7822    7854
RBMASK  037103      6743#   7535*   7553*
RBUFER  037102      6742#   7532*   7534*   7550*   7552*
REANAK  037070      6719#   7187*   7279*   7652*   7707*   7719*   7819
REC   = 000000      2211#
RECMOD= 000031      2327#   2826
REMTMO  037066      6716#   7271*   7273*
REP   = 000003      6808#   7261
REPLOG  022060      3520    3638#
REPMSK= 000004      6791#   7283
REPORT  020612      3400#   4451    5096
REPSEN= 000003      6782#   7279
RERR  = 100000      2394#   6386    7645
RESET = 000400      2384#   6013    6016
RESFLG  006566      2655#   4493*   4517*   4789
```

```
RESTRT  025646          4503    4529    4542    4561    4570#
RHDADR  002664          2523#   7197    7682
RHDMCC  002660          2520#   6099    6101    6123    6125    6132    6441    6442    7463    7687    7698*   7701    7724
                        7725
RHDMID  002657          2518#   7120    7154    7163    7216
RHDMSG  002656          2517#   6210    6556    7117*
RHDNUM  002663          2522#   7268    7352
RHDREP  002662          2521#   7239    7247    7342    7411
RHDTYP  002660          2519#   7221    7233    7261    7289    7313    7511*   7512    7521    7530    7539    7548    7557
RHLPEN  003052          2549#   3509
RHLPTB  003036          2543#   3501
RHLP0   013075          3035#   3406
RHLP1   013133          2543    3035#
RHLP2   013155          2544    3035#
RHLP3   013210          2545    3035#
RHLP4   013241          2546    3035#
RHLP5   013273          2547    3035#
RHLP6   013336          2548    3035#
RI    = 040000          2370#   2718
RINTEN= 000100          2381#   5823    6212    6447    6560    7124    7126    7733
RMDLOP= 000047          2341#   2943
RMMASK  037105          6748#   7544*   7562*
RMSGCC  011512          2988#   6204*   6211*   6396*   6417*   6441*   6557*   7121*   7666*   7677*   7724*
RMSGPT  011510          2987#   6203*   6210*   6391    6393*   6418*   6440*   6556*   7120*   7661    7663*   7678*   7723*
RMSTER  037104          6747#   7541*   7543*   7559*   7561*
RNODE   011522          2992#   4613*   5394    6080    6200    6256
RNODM   046422          7946    7966#
RNOTNF= 000006          2357#   3469    3471    3476
RPASS   006600          2673#   3311    4821*   4840    4848    5101*   5165    5334*   5818    5820*
RPERR = 000004          2355#   3472
RPEXT = 000002          2353#   3451    3465    3516
RPFUL = 000005          2356#   3474
RPHLP = 000001          2352#   3461    3463    3511
RPLOG = 000003          2354#   3467    3521
RPSWO = 000007          2358#   3478
RPT     022126          3656#   3705    3725    3736    3752    3766    3782    3806
RPTAA   022176          3671#
RPTABO  022512          2769    3739#
RPTDCK  022642          2764    3769#
RPTDDE  022566          2767    3754#
RPTDER  022352          2762    3707#
RPTDLE  022642          2766    3768#
RPTDSP  007654          2758#   3691
RPTDVI  022446          2763    3727#
RPTEOP  022512          2768    3740#
RPTIV   013405          3035#   3550
RPTMSB  023016          3704    3797    3805    3818#
RPTMSC  022716          2765    3788#
RPTMSE  023002          3806#
RPTNV   013430          3035#   3564
RPTTXQ  022300          2758    2759    2760    2761    3693#
RPT0    022172          3647    3663    3667    3670#
RPT1    022160          3660    3666#
RTS   = 000004          2369#   2717    6631    6672
RUN   = 000004          2306#   2804    4900    5099
RXACT = 004000          2383#
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```
RXBUF   004150          2592#   5402
RXC   = 000006          2253#   3299    3349
RXCSR   011450          2961#   4597*   5823*   6017    6026    6055*   6064    6076    6170    6212*   6285    6360    6447*
                        6560*   6631*   6635    6643    6672*   7124*   7126*   7481    7616    7733*
RXD   = 000100          6820#   7202    7356    7367    7730
RXDBUF  011454          2963#   4602*   4603*   6385    7644
RXDONE= 000200          2382#   6383    7641
RXENA = 000020          2379#   5823    6212    6447    6560    7124    7126    7733
RXINEX  036224          6384    6397    6419    6443    6449#
RXIN1   035702          6375    6378#
RXIN2   035630          6369#
RXIN21  035714          6362    6364    6366    6383#
RXIN3   036074          6387    6422#
RXIN4   035742          6391#
RXIN5   036140          6401    6436#
RXIN6   036050          6399    6416#
RXIN7   036210          6434    6437    6445#
RXIN8   036216          6413    6447#
RXM   = 000040          2277#   6091    6199    6202    6436    6438    7118    7165    7691    7696
RXMTOT  006476          2618#   5382*   5428    5501    5693
RXON    042000          6983*   6997*   7010*   7028*   7036*   7061*   7070*   7114#   7148*
RXONEX  042102          7115    7128#
RXONLY  032210          2677    5426#
RXON2   032210          5427#
RXOVMS= 000001          6792#   7544    7651
RXOVRU= 000011          6784#   7539    7652
RXPRC   037120          6762#   6911*   6968    6989    7020    7044    7048*   7051    7252    7299*   7336    7420*   7713
RXPREX  043730          7159    7258    7307    7318    7349    7405    7422    7424    7426    7428    7431#
RXPROT  042104          6943    6963*   6975*   6986*   7015*   7033*   7050*   7066*   7147#   7173    7180    7194    7210
                        7225    7230    7243    7256    7267    7275    7286    7295    7327    7364    7374    7383    7397
                        7429    7773*
RXPTR   006440          2601#   4799*   5380*   5403    5427    5476    5502    5599    5691
RXQ   = 000004          2252#   3295    5901
RXTHER  037072          6722#   7215*   7571    7573*   7577*
RXTXTE  037110          6757#   7505*   7576*
RXWAIT  042110          7011*   7029*   7062*   7151#
R10$    C 1036          3460#
R11$    021044          3461    3462#
R12$    021062          3463    3464#
R125$   021232          3480#
R13$    021100          3465    3466#
R14$    021114          3467    3468#
R20$    021140          3470#
R21$    021162          3472    3473#
R22$    021200          3474    3475#
R30$    021230          3469    3471    3476    3477    3478    3479#
SACK  = 000004          6817#   7031    7270    7315    7362    7418    7782    7811
SCM     016603          3035#   3316
SCMD    016636          3035#   3324
SCML    016625          3035#   3320
SDATA = 000020          6819#   6961    6984    7013    7064    7228    7790
SDVE    016572          3035#   3302
SDVI    016614          3035#   3307
SELECT  037134          6768#   6933*   7008    7026    7059    7192*   7689*   7771    7781*   7808*
SELTHE  037071          6720#
SEND  = 000020          2389#   6110    6273    6499    6569    7870    7873
```

```
SEOP      016647     3035#   3328    4894    5261
SETET   = 000060     2350#   2909    4918    5182    5256
SETEXP= 000010       2310#   2850    5185
SETTRN= 000011       2311#   2852
SHFO      014507     3035#   4140
SHF1      014545     3035#   4177
SHMSG     013516     3035#   5155
SHOW    = 000002     2304#   2811    4916    5076    5109    5123
SHTAB     003072     2558#   5143    5149
SHTEND    003101     2561#   5146
SHTYP0    013552     2551    3035#
SHTYP1    013561     2551    3035#
SHTYP2    013566     2551    3035#
SHTYP3    013573     2551    3035#
SHTYP4    013600     2551    3035#
SHTYP5    013606     2551    3035#
SHTYP6    013613     2551    3035#
SHTYP7    013621     2551    3035#
SHTYTB    003052     2551#   5154
SHWOP     023714     3734    4124#   4842    5167
SIZE    = 000012     2312#   2923    5189    5195
SMSC      016660     3035#   3334
SNAK    = 000010     6818#   7176    7185    7278    7322    7377    7390    7568    7649    7708    7720    7784    7823
SOH     = 000001     6799#   7851
SPARE0    037112     6758#
SPARE1    037113     6759#
SRD     = 004000     2371#   2719
SRXQ      016561     3035#   3294
SSTACK= 002000       6823#   7293    7788    7845
SSTART= 004000       6824#   6941    7786    7834
STACK   = 000007     6810#   7313    7840
ST'DD     006510     2624#   3874    5170*
S AIND    037212     3573    6857#
S ALSI    037152     3571    6834#
STAPRI    021542     3527    3533    3547    3560#
START     025446     4498    4517#
STATB   = 000001     2234#   3351    4148    5316
STATUS= 000016       2316#   2874
STA0A     037262     6834    6883#
STA1A     037311     6835    6883#
STA10A    040007     6842    6883#
STA11A    040071     6843    6883#
STA12A    040166     6844    6883#
STA13A    040262     6845    6883#
STA14A    040360     6846    6883#
STA15A    040456     6847    6883#
STA16A    040544     6848    6883#
STA17A    040631     6849    6883#
STA2A     037347     6836    6883#
STA3A     037403     6837    6883#
STA4A     037475     6838    6883#
STA5A     037561     6839    6883#
STA6A     037641     6840    6883#
STA7A     037725     6841    6883#
STRIP   = 000400     2397#   6212    6560    7124    7126
STRT    = 000006     6809#   7289    7830
```

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STXC    016550          3035#   3289
STXQ    016537          3035#   3284
SVCGBL= 000000          1959#   1978    1987    1989    1991    1993    1995    1997    1999    2001    2003    2005    2007
                        2009    2011    2013    2015    2017    2019    2021    2024    2027    2029    2031    2033    2035
                        2037    2039    2041    2043    2045    2047    2049    2051    2053    2055    2057    2059    2061
                        2073    2087    2088    3011    3021    3037    3054    3067    3081    3101    3120    3219    4448
                        4468    4484    4669    4683    4719    4741    6358    6489    7614    7919    8001#   8002
SVCINS= 000001          1959#   1979    1980    1981    1982    1983    1984    1985    1986    1988    1990    1992    1994
                        1996    1998    2000    2002    2004    2006    2008    2010    2012    2014    2016    2018    2020
                        2022    2023    2025    2026    2028    2030    2032    2034    2036    2038    2040    2042    2044
                        2046    2048    2050    2052    2054    2056    2058    2060    2062    2072    2074    2086    3012
                        3014    3022    3027    3039    3040    3041    3042    3043    3044    3045    3046    3047    3048
                        3051    3056    3057    3058    3059    3060    3061    3064    3069    3070    3071    3072    3073
                        3074    3075    3078    3083    3084    3085    3086    3087    3088    3089    3092    3103    3104
                        3105    3106    3107    3108    3109    3112    3122    3123    3124    3125    3126    3127    3128
                        3129    3132    3135    3136    3245    3360    3361    3362    3363    3364    3368    3369    3370
                        3371    3372    3406    3407    3408    3409    3410    3417    3418    3419    3420    3421    3422
                        3423    3424    3434    3435    3436    3437    3438    3444    3445    3446    3447    3448    3503
                        3504    3505    3506    3507    3508    3550    3551    3552    3553    3554    3564    3565    3566
                        3567    3568    3584    3585    3586    3587    3588    3589    3595    3596    3597    3598    3599
                        3600    3601    3602    3603    3620    3621    3622    3623    3624    3625    3626    3627    3628
                        3629    3630    3631    3632    3649    3650    3651    3652    3653    3672    3673    3674    3675
                        3676    3682    3683    3684    3685    3686    3687    3688    3689    3690    3697    3698    3699
                        3700    3701    3702    3703    3711    3712    3713    3714    3715    3716    3718    3719    3720
                        3721    3722    3723    3724    3744    3745    3746    3747    3748    3749    3750    3751    3758
                        3759    3760    3761    3762    3763    3764    3765    3773    3774    3775    3776    3777    3778
                        3779    3780    3790    3791    3792    3793    3794    3795    3799    3800    3801    3802    3803
                        3819    3820    3821    3822    3823    3839    3840    3841    3842    3843    3877    3878    3879
                        3880    3881    3882    3887    3888    3889    3890    3891    3892    3893    3896    3897    3898
                        3899    3900    3901    3941    3942    3943    3944    3945    4136    4137    4138    4139    4140
                        4141    4142    4143    4144    4172    4173    4174    4175    4176    4177    4178    4179    4180
                        4181    4323    4324    4325    4326    4327    4366    4367    4368    4369    4370    4459    4491
                        4495    4496    4498    4500    4501    4503    4505    4506    4508    4511    4512    4514    4522
                        4523    4524    4526    4532    4533    4534    4536    4545    4547    4552    4553    4554    4555
                        4556    4557    4558    4559    4564    4565    4566    4567    4568    4586    4587    4588    4590
                        4622    4623    4624    4625    4626    4627    4632    4633    4634    4635    4636    4637    4639
                        4640    4641    4642    4643    4644    4647    4648    4650    4651    4658    4674    4687    4688
                        4699    4702    4703    4710    4723    4724    4731    4745    4746    4753    4783    4784    4785
                        4786    4787    4825    4826    4827    4828    4829    4831    4832    4833    4834    4835    4836
                        4845    4847    4851    4852    4861    4862    4863    4864    4865    4866    4867    4868    4878
                        4879    4880    4881    4882    4887    4888    4889    4890    4891    4911    4912    4924    4925
                        4926    4927    4928    4929    4939    4940    4941    4942    4943    4944    4965    4966    4967
                        4968    4969    4970    4981    4982    4983    4984    4985    4986    5081    5082    5083    5084
                        5085    5086    5153    5154    5155    5156    5157    5158    5159    5200    5201    5202    5203
                        5204    5230    5231    5232    5233    5234    5303    5304    5305    5306    5307    5352    5353
                        5354    5355    5356    5369    5370    5371    5372    5373    5713    5714    5715    5716    5731
                        5732    5733    5734    5744    5745    5746    5747    5787    5788    5789    5790    5839    5840
                        5841    5842    5843    5872    5873    5874    5875    5876    5877    5878    5879    5936    5937
                        5938    5939    5940    5963    5964    5965    5966    5967    6020    6031    6032    6033    6034
                        6069    6070    6071    6072    6075    6114    6137    6138    6139    6140    6278    6290    6291
                        6292    6293    6408    6409    6410    6411    6430    6431    6432    6433    6452    6524    6574
                        6617    6634    6648    6649    6650    6651    6919    6920    6921    6922    6923    6924    7153
                        7302    7303    7304    7305    7306    7468    7469    7470    7471    7486    7487    7488    7489
                        7738    7886    7900    7918    7925    7926    7927    7935    7936    7937    7938    7940    7941
                        7942    7943    7945    7946    7947    7949    7951    7952    7953    7955    7957    7958    7959
                        7960    7961    7963    7998    7999    8000
```

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SVCSUB= 000001           1959#
SVCTAG= 000001           1959#  2114   3050   3063   3077   3091   3111   3131   3244   3425   4458   4560   4657
                         4673   4709   4730   4752   4869   5880   6451   6523   7737   7899   7964
SVCTST= 000001           1959#  4768
SYN   = 000226           2398#
SYNCC   011504           2985#  6109*  6268*  6491   6494*  6568*  7865*
SYNCW   011506           2986#  5392*  5397*  6493
S$LSYM= 010000           1959#  2115#  3051#  3064#  3078#  3092#  3112#  3132#  3245#  3418   3425   3426#  4459#
                         4553   4560   4561#  4658#  4674#  4710#  4731#  4753#  4862   4869   4870#  5873   5880
                         5881#  6452#  6524#  7738#  7900#  7965#
S1      025434           4508   4510#
S2      025510           4526   4531#
S3      025560           4536   4544#
S4      025626           4547   4563#
T       037062           6709#  7102*  7239   7245   7246   7248*  7342   7344   7345   7346   7347*  7411   7413
                         7414   7415   7416*  7855
TABEX   014315           3035#  4939   4981
TAL   = 000005           2216#  5287   5972
TALCK   033614           2682   5865#  5908   5910
TALMOD= 000035           2331#  2835
TCURAD  006466           2613#  4805*  4808   4950   4955*  5130*
TEMP    006534           2638#  3285*  3290*  3295*  3299*  3303*  3308*  3317*  3321*  3325*  3329*  3335*  3349
                         3375   3376*  3377*  3378   3885*  3888   3947*  3948*  3949   3987*  3988*  3994   4126*
                         4139   4147*  4150*  4176   4693*  5151*  5153   5214*  5215*  5219   5222   5605*  5606*
                         5610   6614*  6615*  6618   7096*  7101
TEMP1   006536           2639#  3284*  3289*  3294*  3302*  3307*  3316*  3320*  3324*  3328*  3334*  3368   3607*
                         3612*  3625   4133*  4137   4151*  4154*  4175   6580*  6581*
TEMP2   006540           2640#  3309*  3310*  3381   3608*  3615*  3623   3990*  3992*  3996   4134*  4136   4155*
                         4158*  4174   4695*  5557*  5570*  5588*  5594   5608*  5609   5629*  5697*  5814*  5889*
                         5904*  5942*  5957*  6025*  6063*  6131*  6284*  6374*  6377*  6404*  6424*  6642*  6669*
                         6670   7462*  7480*  7632*  7635*
TEMP3   006542           2641#  3069   3104   3124   3311*  3382   3609*  3618*  3621   4129*  4132*  4138   4696*
                         5559*  5572*  5589*  5595   5606   5607   5608   5630*  5699*  5709   5815*  5890*  5905*
                         5944*  5958*  6017*  6026*  6064*  6132*  6285*  6369*  6371   6402*  6425*  6643*  7460*
                         7463*  7481*  7627*  7629
TEMP4   006544           2642#  3056   3103   3123   3312*  3346*  3383   4160*  4163*  4172   4694*  5706*  5719*
                         5724*  5725   5740   5813*  6027*  6065*  6133*  6286*  6370*  6371   6403*  6426*  6644*
                         7461*  7464*  7482   7626*  7629
TEMP5   006546           2643#  4165*  4168*  4173
TEOM  = 001000           2392#  6512
TERR  = 100000           2393#
TIMEOU  037150           6774#  6913*  7477*  7478   7490*
TIMERS  006646           2699#  3237   3241*  6092*  6096   6115   6121   6275*  6279   6575   6932*  6949*  7156
                         7170   7204   7358   7371   7454   7473*  7492*
TIMER1  006642           2697#  3231   3233*  4777*  4778   6057*  6058   6621*  6627   6632*  6637
TIMER2  006644           2698#  3234   3236*
TIMMIN  006634           2693#  3228*  3380   4570*
TIMSEC  006636           2694#  3225*  3226   3229*  3379   4571*
TIMTCK  006640           2695#  3222*  3224*  3239   3377   4572*
TINTEN= 000100           2390#  6110   6273   6499   6569   7870   7873
TMESRX  037056           6702#  6977*  6991*  7035*  7053*  7072   7074*
TMESTX  037054           6701#  6966*  6992*  7018*  7069*  7075   7077*
TOINOT  035474           6280   6296#
TOTCC   006530           2636#  3934*  3935   3946*  3948   3950*  4794*  4920*  4921   4954   4961*  4962   4998
TRA   = 000001           2212#  5284
TRAMOD= 000034           2330#  2833
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```
TRIBN   037065          4616* 4618* 6713# 7096  7101* 7197  7682  7778
TRIBNQ  046504          7958  7966#
TRVACT  024366          4236  4247# 4263  4268  4273  4276  4296  4362  4385  4406  4430
TRVALN  025160          4225  4389#
TRVALP  025114          4224  4375#
TRVBIF  024472          4221  4276#
TRVBR   024462          4220  4273#
TRVBRC  024406          4234  4254# 4274  4279  4298  4372  4387  4408  4434
TRVDEC  024566          4227  4301#
TRVERR  024424          4218  4263#
TRVEXI  024444          4219  4268#
TRVNMA  024606          4302  4305#
TRVNOB  024416          4259# 4280  4297  4363  4386  4407
TRVNUM  024600          4223  4304#
TRVOCT  024600          4226  4303#
TRVSPA  024514          4222  4282#
TRVSTR  025246          4228  4412#
TSOM  = 000400          2391#
TTL   = 000001          2220# 4853  6041
TTLL  = 004000          2387# 6040  6043
TTLLOP= 000044          2338# 2937
TTOTCC  006464          2612# 4096  4795* 4920  4931  4954* 5126*
TUPNON  037146          6773# 6934* 7114  7127* 7732*
TXACT = 001000          2385# 6670
TXBUF   003150          2591# 4064  4805  5129
TXC   = 000002          2251# 3290
TXCSR   011456          2964# 4604* 4605* 6013* 6016* 6027  6040* 6043* 6048* 6065  6110* 6273* 6286
                        6499* 6569* 6644  6669  7482  7870* 7873*
TXDBUF  011460          2965# 4606* 4607* 6493* 6498* 6509* 6512*
TXDONE= 000200          2386#
TXINEX  036426          6495  6502  6511  6518  6521#
TXIN1   036254          6492  6496#
TXIN2   036314          6497  6503#
TXIN3   036420          6514  6519#
TXIN4   036356          6504  6512#
TXM   = 000020          2275# 6091  6254  6258  6513  6515  7797  7816  7828  7838  7850
TXMTOT  006462          2611# 4084  4811* 4933* 4935  4956* 5121  5125* 5366  5451  5474  5499
TXONLY  032242          2678  5449#
TXON2   032250          5450#
TXPRC   037122          6763# 6912* 6964  6987  7016  7019* 7043* 7056  7067  7249* 7300* 7339  7348*
                        7417* 7427  7803
TXPREX  046222          7883  7893#
TXPROT  045336          6942  6962* 6985* 7014* 7032* 7065* 7179  7193  7229  7274  7285  7294  7316
                        7326  7363* 7382  7396  7419  7759#
TXPTR   006442          2602# 4077* 4079* 4080  4089* 4091  4798* 4809  4934* 4948* 4949  4953* 5127*
                        5128  5378* 5450  5475  5500
TXQ   = 000000          2250# 3285
TXREAD  037126          6500* 6765# 6910* 6995  7764  7780* 7887
TXTHER  037073          6723# 7244* 7501  7503* 7506*
T$ARGC= 000001          1979# 1980# 1981# 1982# 1983# 1984# 3039# 3048  3056# 3061  3069# 3075  3083#
                        3089  3103# 3109  3122# 3129  3360# 3364  3368# 3372  3406# 3410  3434# 3438
                        3444# 3448  3503# 3508  3550# 3554  3564# 3568  3584# 3589  3595# 3603  3620#
                        3632  3649# 3653  3672# 3676  3682# 3690  3697# 3703  3711# 3716  3718# 3724
                        3744# 3751  3758# 3765  3773# 3780  3790# 3795  3799# 3803  3819# 3823  3839#
                        3843  3877# 3882  3887# 3893  3896# 3901  3941# 3945  4136# 4144  4172# 4181
                        4323# 4327  4366# 4370  4564# 4568  4783# 4787  4825# 4829  4878# 4882  4887#
```

```
                    4891    4924#   4929    4939#   4944    4965#   4970    4981#   4986    5081#   5086    5153#   5159
                    5200#   5204    5230#   5234    5303#   5307    5352#   5356    5369#   5373    5839#   5843    5936#
                    5940    5963#   5967    7302#   7306
T$CODE= 005052      3420#   4555#   4864#   5875#   7925#   7935#   7940#   7945#   7949#   7951#   7955#   7957#
T$ERRN= 000007      1959#   5714#   5732#   5745#   5788#   6032#   6070#   6138#   6291#   6409#   6421#   6649#   7469#
                    7487#
T$EXCP= 000000      3420#   3425    4555#   4560    4864#   4869    5875#   5880    7935#   7939    7940#   7944    7957#
                    7962
T$FLAG= 000040      3135#   3137    4650#   4702#   4723#   4725    4745#   4747    4851#   4911#
T$GMAN= 000000      1959#   3417#   3420    3426#   4552#   4561#   4861#   4664    4870#   5872#   5875    5881#
T$HILI= 000377      3420#   3424    4555#   4559    4864#   4868    5875#   5879    7935#   7938    7940#   7943    7957#
                    7961
T$LAST= 000001      1959#   7999#
T$LOLI= 000001      3420#   3423    4555#   4558    4864#   4867    5875#   5878    7935#   7937    7940#   7942    7957#
                    7960
T$LSYM= 010000      1959#   2115    3051    3064    3078    3092    3112    3132    3245    4459    4658    4674    4710
                    4731    4753    6452    6524    7738    7900    7965
T$LTNO= 000001      8002#
T$NEST= 177777      1959#   1961#   2086#   2114#   3037#   3050#   3054#   3063#   3067#   3077#   3081#   3091#   3101#
                    3111#   3120#   3131#   3219#   3244#   4448#   4458#   4468#   4475#   4484#   4657#   4669#   4673#
                    4683#   4709#   4719#   4730#   4741#   4752#   4769#   6358#   6451#   6489#   6523#   7614#   7737#
                    7899#   7918#   7949    7955    7963#   8003#
T$NS0 = 000000      1961#   8003
T$NS1 = 000004      2086#   2114    3037#   3050    3054#   3063    3067#   3077    3081#   3091    3101#   3111    3120#
                    3131    3219#   3244    4448#   4458    4468#   4475    4484#   4657    4669#   4673    4683#   4709
                    4719#   4730    4741#   4752    4769#   7899    7918#   7949    7955    7963
T$NS2 = 000010      6358#   6451    6489#   6523    7614#   7737
T$PTNU= 000000      1959#
T$SAVL= 177777      1959#
T$SEGL= 177777      1959#
T$SUBN= 000000      1959#   4768#
T$TAGL= 177777      1959#
T$TAGN= 010024      1959#   2086#   3037#   3054#   3067#   3081#   3101#   3120#   3219#   4448#   4468#   4484#   4669#
                    4683#   4719#   4741#   4769#   6358#   6489#   7614#   7918#
T$TEMP= 000000      2074#   2075#   2114#   3050#   3063#   3077#   3091#   3111#   3131#   3135#   3136    3244#   3420#
                    4458#   4475#   4555#   4650#   4651    4657#   4673#   4702#   4703    4709#   4723#   4724    4730#
                    4745#   4746    4752#   4851#   4852    4864#   4911#   4912    5875#   6451#   6523#   7737#   7899#
                    7925#   7935#   7940#   7945#   7951#   7957#   7963#   8003#
T$TEST= 000001      1959#   4768#   8002
T$TSTM= 177777      1959#   3047    3051    3060    3064    3074    3078    3088    3092    3108    3112    3128    3132
                    3363    3371    3409    3417    3437    3447    3507    3553    3567    3588    3602    3631    3652
                    3675    3689    3702    3715    3723    3750    3764    3779    3794    3802    3822    3842    3881
                    3892    3900    3944    4143    4180    4326    4369    4459    4491    4496    4501    4506    4512
                    4523    4533    4545    4552    4567    4587    4626    4636    4643    4648    4650    4658    4674
                    4688    4699    4702    4710    4731    4753    4786    4828    4835    4845    4851    4861    4881
                    4890    4911    4928    4943    4969    4985    5085    5158    5203    5233    5306    5355    5372
                    5713    5731    5744    5787    5842    5872    5939    5966    6020    6031    6069    6075    6114
                    6137    6278    6290    6408    6430    6574    6617    6634    6648    6923    7153    7305    7468
                    7486    7886    7900
T$TSTS= 000001      1959#   4769#
T$SAU = 010016      4741#   4745    4752
T$SAUT= 010013      4669#   4673
T$SCLE= 010014      4683#   4702    4709
T$SDU = 010015      4719#   4723    4730
T$SHAR= 010023      7918#   7964
T$SHW = 010000      2086#   2114
```

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T$$INI= 010012            4484#   4650    4657
T$$MSG= 010006            3037#   3050    3054#   3063    3067#   3077    3081#   3091    3101#   3111    3120#   3131    3135
T$$PRO= 010011            4468#
T$$RPT= 010010            4448#   4458
T$$SRV= 010022            3219#   3244    6358#   6451    6489#   6523    7614#   7737
T$$TES= 010017            4769#   4851    4911    7899
T1      026342 G          2074    4768#
UAM   = 000200 G          2190#
UPTABL  032610            5591#
UPTA1   032676            5597    5604#
UPTA3   032674            5601    5603#
UPTA4   032634            5592    5596#
UPTEX   032746            5603    5615#
VECTOR  046367            7941    7966#
X       037063            6710#   7246*   7345*   7414*
XS    = 000220            1962#   2795#   2796#   2797#   2798#   2799#   2800#   2801#   2802#   2803#   2804#   2805#   2806#
                          2807#   2808#   2809#   2810#   2811#   2812#   2813#   2814#   2815#   2819#   2820#   2821#   2822#
                          2823#   2824#   2825#   2826#   2827#   2828#   2829#   2830#   2831#   2832#   2833#   2834#   2835#
                          2836#   2840#   2841#   2842#   2843#   2844#   2849#   2850#   2851#   2852#   2853#   2856#   2857#
                          2858#   2859#   2860#   2861#   2862#   2863#   2866#   2867#   2868#   2869#   2870#   2871#   2874#
                          2875#   2876#   2877#   2879#   2880#   2881#   2882#   2883#   2885#   2886#   2888#   2889#   2892#
                          2895#   2896#   2897#   2898#   2899#   2900#   2901#   2902#   2903#   2904#   2905#   2906#   2907#
                          2908#   2909#   2910#   2912#   2913#   2914#   2915#   2916#   2917#   2918#   2921#   2922#   2923#
                          2924#   2925#   2926#   2929#   2930#   2931#   2934#   2937#   2938#   2939#   2940#   2941#   2942#
                          2943#   2944#   2947#   2948#   2949#   2954#   3460#   3461#   3462#   3463#   3464#   3465#   3466#
                          3467#   3468#   3469#   3470#   3471#   3472#   3473#   3474#   3475#   3476#   3477#   3478#   3479#
                          3480#   3481#
XSALWA= 000000            1959#
XSFALS= 000040            1959#   7955
XSOFFS= 000400            1959#   7949    7955
XSTRUE= 000020            1959#   7949
$PATCH  046532            7993#
.     = 046616            1959#   2484#   2490#   2498#   2513#   2524#   2528#   2562#   2591#   2592#   2593#   2594#   2595#
                          2596#   2599#   2703#   2704#   2798#   2802#   2806#   2813#   2820#   2822#   2828#   2830#   2841#
                          2843#   2850#   2852#   2868#   2870#   2874#   2876#   2888#   2895#   2897#   2899#   2901#   2903#
                          2909#   2923#   2925#   2941#   3014#   3035#   3136    3463#   3465#   3469#   3474#   3476#   4651
                          4703    4724    4746    4852    4912    7309#   7949    7955    7994#
```

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BCOMPL      1#  1959#  4497  4502  4513  4846
BERROR      1#  1959#
BGNAU       1#  1959#  4740
BGNAUT      1#  1959#  4668
BGNCLN      1#  1959#  4682
BGNDU       1#  1959#  4718
BGNHRD      1#  1959#  7917
BGNHW       1#  1959#  2085
BGNINI      1#  1959#  4483
BGNMOD      1#  1959#  1960
BGNMSG      1#  1959#  3036  3053  3066  3080  3100  3119
BGNPRO      1#  1959#  4467
BGNPTA      1#  1959#
BGNRPT      1#  1959#  4447
BGNSEG      1#  1959#
BGNSET      1#  1959#
BGNSFT      1#  1959#
BGNSRV      1#  1959#  3218  6357  6488  7613
BGNSUB      1#  1959#
BGNSW       1#  1959#
BGNTST      1#  1959#  4767
BNCOMP      1#  1959#  4507  4525  4535  4546  4589
BNERRO      1#  1959#
BREAK       1#  1959#  6019  6074  6113  6277  6573  6616  6633  7152  7885
BRESET      1#  1959#  4698
CKLOOP      1#  1959#
CLI      1963#  2794   2795  2796  2797  2798  2799  2800  2801  2802  2803  2804  2805  2806  2807
         2808   2809   2810  2811  2812  2813  2814  2818  2819  2820  2821  2822  2823  2824  2825
         2826   2827   2828  2829  2830  2831  2832  2833  2834  2835  2839  2840  2841  2842  2843
         2848   2849   2850  2851  2852  2855  2856  2857  2858  2859  2860  2861  2862  2865  2866
         2867   2868   2869  2870  2873  2874  2875  2876  2878  2879  2880  2881  2882  2884  2885
         2887   2888   2891  2894  2895  2896  2897  2898  2899  2900  2901  2902  2903  2904  2905
         2906   2907   2908  2909  2911  2912  2913  2914  2915  2916  2917  2920  2921  2922  2923
         2924   2925   2928  2929  2930  2933  2936  2937  2938  2939  2940  2941  2942  2943  2946
         2947   2948   2953  3459  3460  3461  3462  3463  3464  3465  3466  3467  3468  3469  3470
         3471   3472   3473  3474  3475  3476  3477  3478  3479  3480
CLOCK       1#  1959#  4521  4531
CLOSE       1#  1959#
CLRVEC      1#  1959#
COMMEN      1#  1959#
DELAY       1#  1959#
DESCRI      1#  1959#  3020
DEVTYP      1#  1959#  3010
DISPAT      1#  1959#  2071
DISPLA      1#  1959#
DOCLN       1#  1959#  4490
DODU        1#  1959#
DORPT       1#  1959#
ENDAU       1#  1959#  4751
ENDAUT      1#  1959#  4672
ENDCLN      1#  1959#  4708
ENDCOM      1#  1959#
ENDDU       1#  1959#  4729
ENDHRD      1#  1959#  7962
ENDHW       1#  1959#  2113
ENDINI      1#  1959#  4656
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ENDMOD      1#  1959#  8002
ENDMSG      1#  1959#  3049  3062  3076  3090  3110  3130
ENDPRO      1#  1959#  4474
ENDPTA      1#  1959#
ENDRPT      1#  1959#  4457
ENDSEG      1#  1959#
ENDSET      1#  1959#
ENDSFT      1#  1959#
ENDSRV      1#  1959#  3243  6450  6522  7736
ENDSUB      1#  1959#
ENDSW       1#  1959#
ENDTST      1#  1959#  7898
EQUALS      1#  1959#  2130
ERRDF       1#  1959#
ERRHRD      1#  1959#
ERROR       1#  1959#
ERRSF       1#  1959#
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INLOOP      1#  1959#
IOSETU      1#  1959#
IOSTAR      1#  1959#
KT11        1#  1959#
LASTAD      1#  1959#  7997
MANUAL      1#  1959#  4844
MEMORY      1#  1959#
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            2043  2045  2047  2049  2051  2053  2055  2057  2059  2061  3011#  3021#
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                7302#   7303
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                3371#   3409#   3417#   3437#   3447#   3507#   3553#   3567#   3588#   3602#   3631#   3652#   3675#   3689#   3702#
                3715#   3723#   3750#   3764#   3779#   3794#   3802#   3822#   3842#   3881#   3892#   3900#   3944#   4143#   4180#
                4326#   4369#   4459#   4491#   4496#   4501#   4506#   4512#   4523#   4533#   4545#   4552#   4567#   4587#   4626#
                4636#   4643#   4648#   4650#   4658#   4674#   4688#   4699#   4702#   4710#   4731#   4753#   4786#   4828#   4835#
                4845#   4851#   4861#   4881#   4890#   4911#   4928#   4943#   4969#   4985#   5085#   5158#   5203#   5233#   5306#
                5355#   5372#   5713#   5731#   5744#   5787#   5842#   5872#   5939#   5966#   6020#   6031#   6069#   6075#   6114#
                6137#   6278#   6290#   6408#   6430#   6574#   6617#   6634#   6648#   6923#   7153#   7305#   7468#   7486#   7886#
                7900#
MSTSTL            1#    1959#   3047#   3051#   3060#   3064#   3074#   3078#   3088#   3092#   3108#   3112#   3128#   3132#   3363#
                3371#   3409#   3417#   3437#   3447#   3507#   3553#   3567#   3588#   3602#   3631#   3652#   3675#   3689#   3702#
                3715#   3723#   3750#   3764#   3779#   3794#   3802#   3822#   3842#   3881#   3892#   3900#   3944#   4143#   4180#
                4326#   4369#   4459#   4491#   4496#   4501#   4506#   4512#   4523#   4533#   4545#   4552#   4567#   4587#   4626#
                4636#   4643#   4648#   4650#   4658#   4674#   4688#   4699#   4702#   4710#   4731#   4753#   4786#   4828#   4835#
                4845#   4851#   4861#   4881#   4890#   4911#   4928#   4943#   4969#   4985#   5085*   5158#   5203#   5233#   5306#
                5355#   5372#   5713#   5731#   5744#   5787#   5842#   5872#   5939#   5966#   602(    6031#   6069#   6075#   6114#
                6137#   6278#   6290#   6408#   6430#   6574#   6617#   6634#   6648#   6923#   715?#   7305#   7468#   7486#   7886#
                7900#
MSWORD            1#    1959#   2017#   2026    2072#   2074    3135#   3417#   3419    3420#   4552#   4554    4555#   4650#   4702#
                472?#   4745#   4851#   4861#   4863    4864#   4911#   5713#   5714    5715    5716    5731#   5732    5733    5734
                5744#   5745    5746    5747    5787#   5788    5789    5790    5872#   5874    5875#   6031#   6032    6033    6034
                6069#   6070    6071    6072    6137#   6138    6139    6140    6290#   6291    6292    6293    6408#   6409    6410
                6411    6430#   6431    6432    6433    6648#   6649    6650    6651    7468#   7469    7470    7471    7486#   7487
                7488    7489    7925#   7935#   7940#   7945#   7949#   7951#   7955#   7957#   7999    8000
MSXFER            1#    1959#   7949#   7955#
NODCL           1965#   2795    2796    2797    2798    2799    2800    2801    2802    2803    2804    2805    2806    2807    2808
                2809    2810    2811    2812    2813    2814    2815    2819    2820    2821    2822    2823    2824    2825    2826
                2827    2828    2829    2830    2831    2832    2833    2834    2835    2836    2840    2841    2842    2843    2844
                2849    2850    2851    2852    2853    2856    2857    2858    2859    2860    2861    2862    2863    2866    2867
                2868    2869    2870    2871    2874    2875    2876    2877    2879    2880    2881    2882    2883    2885    2886
                2888    2889    2892    2895    2896    2897    2898    2899    2900    2901    2902    2903    2904    2905    2906
                2907    2908    2909    2910    2912    2913    2914    2915    2916    2917    2918    2921    2922    2923    2924
```

```
        2925    2926    2929    2930    2931    2934    2937    2938    2939    2940    2941    2942    2943    2944    2947
        2948    2949    2954    3460    3461    3462    3463    3464    3465    3466    3467    3468    3469    3470    3471
        3472    3473    3474    3475    3476    3477    3478    3479    3480    3481
OPEN       1#   1959#
POINTE     1#   1959#   1971
PRINTB     1#   1959#   3038    3055    3068    3082    3102    3121
PRINTF     1#   1959#   3359    3367    3405    3433    3443    3502    3563    3876    3886    3895    3940    4322    4365
        4563    4782    4824    4877    4886    4923    4938    4964    4980    5080    5152    5199    5229    5302    5351
        5368    5838    5935    5962    7301
PRINTS     1#   1959#   3549    3583    3594    3619    3648    3671    3681    3696    3710    3717    3743    3757    3772
        3789    3798    3818    3838    4135    4171
PRINTX     1#   1959#
READBU     1#   1959#   4544
READEF     1#   1959#   4494    4499    4504    4510
RFLAGS     1#   1959#
SETPRI     1#   1959#   4646    4686
SETVEC     1#   1959#   4621    4631    4638    4830    6918
SLASH      1#   1959#
STARS      1#   1959#
SVC        1#   1959#
XFER       1#   1959#   3135#   4650#   4702#   4723#   4745#   4851#   4911#
XFERF      1#   1959#   7954
XFERT      1#   1959#   7948

. ABS.  046616     000

ERRORS DETECTED:  0

CZDCLA,CZDCLA.LST/CRF/SOL=SVC34R.MLB,CZDCLA.P11
RUN-TIME: 27 34 4 SECONDS
RUN-TIME RATIO: 91/66=1.3
CORE USED:  22K  (43 PAGES)
```