

CVCLHC DPV-11 DATA COMM. LINK TEST  
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.TITLE CVCLHC DPV-11 DATA COMM. LINK TEST

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IDENTIFICATION

PRODUCT CODE: AC-F582C-MC  
PRODUCT NAME: CVCLHC0 DPV-11 DATA COMM. LINK TEST  
PRODUCT DATE: MARCH 82  
MAINTAINER: MERRIMACK DIAGNOSTIC ENGINEERING  
AUTHOR: BRUCE RIBOLINI-BRUCE LUHRS

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## REVISION HISTORY:

<u>REV</u>	<u>DATE</u>	<u>AUTHOR</u>	<u>REASON</u>
A	20-AUG-80	BRUCE RIBOLINI BRUCE LUHRS	ORIGINAL ISSUE, DCLT FOR THE DPV-11
B	21-SEPT-81	ERNIE COOPER	ADD 'SET EXPECT=TRANSMIT COMMAND ADD 'EXIT' COMMAND ADD 'RPT>' LEVEL ADD CHECK TO INSURE TRANSMIT LIST TOTAL = EXPECT LIST TOTAL UPDATE DOCUMENTATION
C	JUNE-82	ERNIE COOPER	ADD ^C ABORT MESSAGE TO EVENT LOG ADD DDCMP PROTOCOL LAYER

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## 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 DPV-11 COMMUNICATION LINKS. THIS PROGRAM ALLOWS THE DPV-11 TO COMMUNICATE WITH OTHER SYNCHRONOUS (INCLUDING DDCMP) DEVICES ON POINT TO POINT OR MULTIPOINT 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 DPV DCLT PROGRAM, THE FOLLOWING MINIMUM HARDWARE IS REQUIRED:

- A LSI-11 CPU
- MINIMUM OF 24K WORDS OF MEMORY
- A WORKING CLOCK
- A CONSOLE TERMINAL
- ANY XXDP+ SUPPORTED LOAD MEDIA
- ONE OF THESE DPV-11 CONFIGURATIONS:

DPV11-DB  
DPV11-DA

### 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.).

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#### 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, AND DVP-11'S AT EACH 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 DPV-11'S, BUT TO TEST THE COMMUNICATION LINK TO WHICH THEY ARE CONNECTED.

SOME OF THE DIAGNOSTICS THAT COULD BE RUN IF EITHER OF THE DPV-11'S LOOK BAD:

CVDPVXX DPV-11 FCTNL DIAG  
CXDPVXX DPV-11 DECK MODULE  
XX= LATEST REVISION

#### 1.5 ASSUMPTIONS - RESTRICTIONS

IT IS ASSUMED THAT THE COMMUNICATIONS DEVICE (A DPV-11) HAS BEEN TESTED USING THE PREREQUISITE 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 DPV IN BIT STUFF MODE IT IS ASSUMED THAT IF THE LINK WORKS IN CHAR MODE THE LINK WILL WORK IN BIT STUFF MODE.

THE DPV11 IS NOT A DMA DEVICE AND THUS MUST RELY ON THE SOFTWARE FOR SERVICE. THEREFORE THIS DCLT WILL NOT RUN WITH THE DPV AT ITS HIGH CLOCK SPEED OF 50KHZ. WITH DDCMP PROTOCOL ENABLED THE HIGHEST SPEED TO BE EXPECTED (LIMITED BY CPU) IS 9.6KB.

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## 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 'DDDD'.

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:DDDD	EXECUTE DDDD PASSES (DDDD = 1 TO 64000)
/FLAGS:FLGS	SET SPECIFIED FLAGS. FLAGS ARE DESCRIBED IN SECTION 2.3.
/EOP:DDDD	REPORT END OF PASS MESSAGE AFTER EVERY DDDD PASSES ONLY. (DDDD = 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)

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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					

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### 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
```

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#### 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 3 OF THE XDP+ USER'S MANUAL). WHEN YOU ANSWER THIS QUESTION WITH A 'Y', THE RUNTIME SERVICES WILL ASK FOR THE NUMBER OF UNITS (IN DECIMAL).

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

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

UNIT 0
FULL DUPLEX OPERATION : (L) Y ?
DPV CSR ADDRESS : (0) 160170 ?
INTERRUPT VECTOR ADDRESS: (0) 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 INTERPROCESSOR TEST PROGRAM(ITEP)) IF OTHER NODE IS ITEP THEN THE ABOVE "MULTIPOINT NETWORK" QUESTION WILL NOT APPEAR.

IF TO THE "MULTIPOINT NETWORK" QUESTION YOU RESPOND WITH "YES" THEN

```
ADDRESS THIS STATION: (D) A ?
```

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

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## 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:

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/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.

DUMP SSSSSS-EEEEEE/B

PRINTS THE CONTENTS OF THE  
MEMORY LOCATIONS BETWEEN  
OCTAL ADDRESSES 'SSSSSS' AND  
'EEEEEE' WHERE 'SSSSSS' IS  
THE START ADDRESS AND  
'-EEEEEE' 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.

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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
<p>NOTE: MODE=ACTIVE IS NOT DEFAULT, A MODE=MTYPE MUST BE TYPED            ----- EACH TIME A RUN IS TYPED</p> <p>WHERE THE 'MTYPE' IS ANY ONE OF THE FOLLOWING:</p> <p>=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)</p> <p>=DOWNLINELOAD (DOWN-LINE-LOADING IS NOT SUPPORTED            FOR DPV-11 TO JPV-11 LINKS).</p> <p>(FORCING NO LOOPING MEANS IT MUST BE            SPECIFIED AS A QUALIFIER ANY TIME ITS            DESIRED, THERE IS NO DEFAULT)</p> <p>AND OPTIONAL 'QUAL' IS ANY COMBINATION OF THE FOLLOWING:</p> <p>/CHECK/NOCHECK ENABLES/DISABLES CHECKING OF RECEIVED            DATA AGAINST THE EXPECTED DATA</p> <p>NOTE: IF BOTH MODES 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.</p> <p>/STATUS/NOSTATUS ENABLES/DISABLES PRINTING OF PROGRAM            STATUS MESSAGES TO THE OPERATOR</p> <p>/ECHO/NOECHO ENABLES/DISABLES THE RETRANSMISSION OF            THE DATA RECEIVED IN PASSIVE MODE.            (IGNORED IN MODES OTHER THAN PASSIVE)</p> <p>/MODEM/NO MODEM/ ENABLES/DISABLES THE REPORTING OF MODEM STATUS            INTERRUPT CHANGES.</p> <p>/LOOP=LTYPE SPECIFIES WHICH, IF ANY, TYPE OF            MAINTENANCE LOOPBACK IS BEING USED.</p>	

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(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 H3260  
                  OR H3259 TURNAROUND CONNECTOR

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

=LOCALMODEM     NOT USED BY DPV,,  
=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 DPV CAN  
                  NOW COMMUNICATE WITH "INTELLIGENT" SYNCHRONOUS  
                  DEVICES THAT SUPPORT DDCMP PROTOCOL IN THEIR  
                  MICROCODE. (DMR,DMC,DMV OR DMP)

/NOPROTOCOL     DISABLES DDCMP PROTOCOL - THE DPV NOW RUNS IN  
                  NON-PROTOCOL MODE. COMMUNICATION POSSIBLE ONLY  
                  BETWEEN DPV'S OR DUP TO DPV LINKS RUNNING DCLT.  
                  WHEN COMMUNICATING WITH AN ITEP PROGRAM ALWAYS  
                  SELECT NON-PROTOCOL MODE.

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

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#### 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  
 OALT - /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 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

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### 2.5.5 PRINT COMMAND

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

<u>COMMAND</u>	<u>DESCRIPTION</u>
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 DISPLAYED  
ONLY WITH PROTOCOL ENABLED(/PROTOCOL).

### 2.5.6 MISC COMMANDS

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

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## 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 CAN 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.

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### 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 'IBF' 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 SYNTAX?	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 REQUIRED 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.

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- ? '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 DIAGNOSTIC 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

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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 MISMATCHES 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

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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 DPV WAS ABLE TO LATCH UP A  
DIFFERENCE IN THE MODEM STATUS. A  
GLITCH IS WHEN A MODEM STATUS INTERRUPT  
OCCURS BUT THE DPV 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  
RXCSR TXCSR  
XXXXXX XXXXXX

THIS MEANS THAT AFTER A MASTER  
RESET WAS ISSUED TO DPV THE  
RXCSR REGISTER WAS NON ZERO.

NO CLEAR TO SEND FROM MODEM  
RXCSR TXCSR  
XXXXXXXX XXXXXXXX

WHEN REQUEST TO SEND SIGNAL  
IS SET MODEM DOES NOT RESPOND  
WITH CLEAR TO SEND

TIME OUT WAITING FOR RX OR TX TO COMPLETE  
RXCSR TXCSR  
XXXXXXXX XXXXXXXX

THIS USUALLY MEANS AN OPEN  
COMMUNICATION LINK.

MODEM DID NOT RETURN MOD' M READY  
RXCSR TXCSR  
XXXXXXXX XXXXXXXX

MODEM DID NOT RESPOND WITH  
MODEM READY(MR).

CRC IN ERROR  
RDSR RXCSR  
XXXXXX XXXXXX

CRC ERROR DETECTED BY HARDWARE  
IN INCOMING MESSAGE.

RECEIVER OVERRUN  
RDSR RXCSR  
XXXXXX XXXXXXXX

RECEIVER WASN'T SERVICED FAST  
ENOUGH(SOFTWARE) TO PREVENT  
A CHARACTER FROM BEING LOST.

TIMED OUT IN START,STACK ACK SEQ

THIS USUALLY MEANS THAT THE DPV

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RDATA  
XXXXXX

SDATA  
XXXXXX

IS UNABLE TO ESTABLISH A  
CONNECTION WITH THE OTHER  
DEVICE BEING TESTED. SEE DDCMP  
SPEC. FOR 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 AVAILABLE 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.

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## 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).

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#### 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 TRANSMITTING 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 DPV IS AN INTERRUPT DRIVEN DEVICE, IT IS BEST TO DISABLE STATUS TO PREVENT OVERRUN ERRORS.(AT HIGH SPEEDS)

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#### 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)

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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.

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## 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] SPARE
.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 RECEIVED. BE AWARE THAT OTHER DATA IS ALSO SENT WITH THE MESSAGE. ALL MESSAGES ARE PRECEDED BY SYNC CHARACTERS(ITEP = 026)(PROTOCOL = 226). ITEP MESSAGES CONTAIN NO CRC CHARACTERS. NON-ITEP MESSAGES ARE ENCLOSED IN A DDCMP ENVELOPE. WITH PROTOCOL ENABLED CONTROL MESSAGES(ACK,NAK,..) ALSO APPEAR ON THE LINK.

#### 6.1.1 TRANSMIT MODE

-----

A LIST OF MESSAGES IS TRANSMITTED WITHOUT EXPECTING ANY DATA TO BE RECEIVED.

#### 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.

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### 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 FOR DPV-11 TO DPV-11 LINKS.

### 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 SWITCHED

### 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

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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 DPV-11 TO DPV-11 LINKS.		

\*= 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 SELECTED THE HALF DUPLEX START COLUMN CAN BE IGNORED.

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## 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 FCX 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 SPECIFY A UNIQUE MESSAGE.

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## 7.0 OTHER INFORMATION

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### 7.1 INTERFACING TO AN "ITEP" NODE

THESE ARE THE RULES WHEN USING ITEP/WITH A DUP TO TALK  
TO A DPV 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/NPR

NOTE: DUP ITEP SENDS ONLY 56 CHARS

\*\*\*\*\*

FOR ONE WAY IN.....

SET SWITCHES TO ....1222

RUN MODE=TRA/STATUS/NPR

\*\*\*\*\*

FOR EXTERNAL LOOPBACK....

SET SWITCHES.....1224

CLEAR EXPECTED  
SET EXP=ITEP/S=56  
RUN MODE=ACTIVE/STATUS/CHECK/NPR

\*\*\*\*\*

FOR INTERNAL LOOPBACK.....

SET SWITCHES.....1260

CLEAR EXPECTED  
SET EXP=ITEP/S=56  
RUN MODE=ACTIVE/STATUS/CHECK/NPR

\*\*\*\*\*

NOTE: DO NOT USE SWITCH 8 WITH ITEP GOING TO DCLT  
THE ONLY MESSG. DCLT SUPPORTS IS MSG 1.  
DCLT IGNORES CRC ERRORS WHEN REC DATA FROM ITEP  
BECAUSE ITPE SENDS NO CRC.  
REMEMBER WHEN YOU ARE COMMUNICATING WITH AN "ITEP" NODE  
ALWAYS DISABLE('/NOPROTOCOL').

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## 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.

EVEN IF YOU ARE CHECKING OUT DPV TO DPV LINKS, IT IS A GOOD IDEA TO ENABLE PROTOCOL. BY EXAMINING THE DDCM<sup>n</sup> STATISTICAL AND ERROR LOG, YOU CAN GET A BETTER PICTURE OF WHAT IS HAPPENING ON THE LINK.

REMEMBER THAT THE PRINTING OF STATUS MESSAGES AND PRINTING C THE EVENT LOG CAN PROVIDE A LOT OF INFORMATION ABOUT THE SEQUENCE OF EVENTS AND HOW THE DEVICE AND LINK ARE BEHAVING.

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 COMMAND SEQUENCE IS:

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

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 000
```

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DCLT> (A) ? /STATUS/NOCHECK/NOECHO/NOMODEM/NOPROTOCOL

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 COMMAND SEQUENCE IS:

```
SE E=T
R M=A/LO=1/CH/PAS=3
```

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.

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/NOPROTOCOL
```

IF A CABLE TURNAROUND CONNECTOR IS AVAILABLE, PUT IT ON THE END OF THE CABLE JUST BEFORE THE MODEM OR IF A H3260(RS-423) ON BOARD CONNECTOR IS AVAILABLE INSTALL IT 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.

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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/NOPROTOCOL
DCLT> (A) ?
```

### 7.2.2 TRANSMIT ON ONE NODE RECEIVE ON THE OTHER

NOW TRY TRANSMITTING 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
SE T=1ALT/S=250	R M=R/NOCH/PAS=3
R M=TR/PAS=3	

WHAT THIS SEQUENCE MEANS:

THE "C E " AND "C T" INITIALIZE BOTH THE  
TRANSMIT AND EXPECT LISTS. THE "SE T=1ALT/S=250"  
SETS THE TRANSMIT LIST ON NODE A TO BE 1 MESSAGE  
WITH A LENGTH OF 250 BYTES AND DATA OF ALTERNATING  
ONES AND ZEROS. 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 BE RECEIVE, NO DATA CHECKING IS TO BE DONE, AND  
THE PASS COUNT IS SET TO THREE.

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) ?
```

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

```

R M=TR/PAS=3
SE E=1ALT/S=250
R M=R/CH/PAS=3
  
```

WHAT THIS SEQUENCE MEANS:

THE "SE E=1ALT/S=250" LINE MUST BE ADDED HERE TO SET UP THE "EXPECT LIST" ON THE RECEIVE NODE SO IT WILL KNOW WHAT TO COMPARE AGAINST. 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/NODEM/NOPROTOCOL
DCLT> (A)?
  
```

NOW RUN THRU THE SEQUENCE AGAIN WITH NODE A RECEIVING AND NODE B TRANSMITTING 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
-----
C E
C T
SE T=CCITT/S=10/C=2
R M=ACT/NOCH/PAS=3

NODE B
-----
C E
C T
SE T=1ALT/S=20/C=2
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

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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/NOPROTOCOL
DCLT> (A) ?
```

FOR NODE B:

```
INI RXQ TXQ TXC RXQ TXQ TXC RXQ
TXQ TXC EOP RXQ TXQ TXC RXQ TXQ
EOP RXQ TXQ TXC RXQ TXQ TXC
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=0ALT/S=10	SE E=0ALT/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

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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 ALTERNATING 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 COULD BE TRIED IS TO LOAD THE TRANSMIT LIST  
 AND EXPECT LIST WITH A LARGE MESSAGE(512 CHARACTERS), ENABLE PROTOCOL  
 AND RUN MANY PASSES. SET BOTH ENDS THE SAME.

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

#### 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  
 LIS>

R M=TA/NOST  
 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

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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

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

SH E  
 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

WHAT YOU WOULD SEE IS

SH E  
 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 COMMAND

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

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```
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 COMMANDS

YOU CAN FIND SEVERAL EXAMPLES OF THE RUN COMMAND 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/NOPROTOCOL

DCLT> (A) ?  
 IF YOU WERE TO EXECUTE THE RUN COMMAND  
 C E  
 C T  
 R M=A/LO=I/ST/CH/PAS=3/PR  
 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  
 CVCLH EOP  
 0 CUMULATIVE ERRORS

DR>

### 7.3.4 EXAMPLES PRINT COMMANDS

THE PRINT COMMAND 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 DCLT> OR DR> THE FOLLOWING IS DISPLAYED.

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

HERE ARE SOME EXAMPLES OF RPT> LEVEL COMMANDS:



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EXIT  
WILL RETURN YOU TO THE DCLT LEVEL.  
DCLT>

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#### 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').

BEWARE THAT THIS DCLT WILL NOT RUN THE DPV11 AT ITS HIGH CLOCK SPEED OF 50KHZ SINCE THE SOFTWARE IS NOT ABLE TO KEEP UP WITH THIS SPEED.

IF YOU ARE RUNNING HALF-DUPLEX IT IS BEST TO USE THE '/NOMODEM' SWITCH BECAUSE EVERY TIME THE LINE IS TURNED-AROUND 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.

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1940  
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002032

002032

002034

.SBTTL PROGRAM HEADER

BGNMOD

```

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

```

POINTER BGNRPT,BGNAU,BGNDU

HEADER CVCLH,C,0,1800.,0,#PRI07

LSNAME::

.ASCII /C/

.ASCII /V/

.ASCII /C/

.ASCII /L/

.ASCII /H/

.BYTE 0

.BYTE 0

.BYTE 0

LSREV::

.ASCII /C/

LSDEPO::

.ASCII /0/

LSUNIT::

.WORD 0

L\$TIML::

.WORD 1800.

L\$HPCP::

.WORD L\$HARD

L\$SPCP::

.WORD 0

L\$HPTP::

.WORD L\$HW

L\$SPTP::

.WORD 0

L\$SLADP::

.WORD L\$LAST

L\$STA::

.WORD 0

L\$CO::

.WORD 0

L\$DTYP::

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PROGRAM HEADER

1996	002034	000000
1997	002036	
1998	002036	000000
1999	002040	
2000	002040	002124
2001	002042	
2002	002042	000340
2003	002044	
2004	002044	000000
2005	002046	
2006	002046	000000
2007	002050	
2008	002050	003
2009	002051	003
2010	002052	
2011	002052	000000
2012	002054	000000
2013	002056	
2014	002056	000000
2015	002060	
2016	002060	011526
2017	002062	
2018	002062	025334
2019	002064	
2020	002064	000000
2021	002066	
2022	002066	000000
2023	002070	
2024	002070	026332
2025	002072	
2026	002072	026324
2027	002074	
2028	002074	000000
2029	002076	
2030	002076	011536
2031	002100	
2032	002100	104055
2033	002102	
2034	002102	000000
2035	002104	
2036	002104	025350
2037	002106	
2038	002106	026236
2039	002110	
2040	002110	026234
2041	002112	
2042	002112	025342
2043	002114	
2044	002114	000000
2045	002116	
2046	002116	000000
2047	002120	
2048	002120	000000
2049		

LSAPT::	.WORD	0
LSDTP::	.WORD	0
LSPRIO::	.WORD	LSDISPATCH
LSENV1::	.WORD	#PRI07
LSEXP1::	.WORD	0
LSMREV::	.WORD	0
LSEF::	.BYTE	C\$REVISION
	.BYTE	C\$EDIT
	.WORD	0
	.WORD	0
LSSPC::	.WORD	0
L\$DEVP::	.WORD	0
LSREPP::	.WORD	L\$DVTYP
LSEXP4::	.WORD	LSRPT
LSEXP5::	.WORD	0
LSAUT::	.WORD	0
LSDUT::	.WORD	LSAU
LSLUN::	.WORD	LSDU
L\$DESP::	.WORD	0
LSLOAD::	.WORD	L\$DESC
L\$ETP::	EMT	ESLOAD
LSICP::	.WORD	0
L\$CCP::	.WORD	L\$INIT
L\$ACP::	.WORD	L\$CLEAN
L\$PRT::	.WORD	L\$AUTO
L\$TEST::	.WORD	L\$PROT
L\$DLY::	.WORD	0
L\$HIME::	.WORD	0
	.WORD	0

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DISPATCH TABLE

.SBTTL DISPATCH TABLE

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

DISPATCH 1

2050  
2051  
2052  
2053  
2054  
2055  
2056  
2057 002122  
2058 002122 000001  
2059 002124  
2060 002124 026340  
2061

.WORD 1  
LSDISPATCH::  
.WORD T1

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DEFAULT HARDWARE P-TABLE

.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.
:--

```

BGNHW DFPTBL

```

        .WORD L10000-L$HW/2
L$HW::
DFPTBL::

```

```

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

```

```

        .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 PARAMETER CODING SECTION BY CHANGING "OFFSETS"

```

```

        .WORD 160170 ;[2] CSR ADDRESS
        .WORD 300 ;[4] INTERRUPT VECTOR
        .WORD 240 ;[6] SPARE
        .WORD 0 ;[10] PT-PT = 0 MULTIPOINT = 1
        .WORD 1 ;[12] TRIB ADDRESS THIS STATION
        .WORD 0 ;[14] OTHER NODE "1TOP"
        .WORD 0 ;[16] SPARE

```

ENDHW

L10000:

```

2062
2063
2064
2065
2066
2067
2068
2069
2070
2071 002126
2072 002126 000010
2073 002130
2074 002130
2075
2076
2077
2078
2079
2080
2081
2082 002130 000001
2083
2084
2085
2086
2087
2088
2089
2090 002132 160170
2091 002134 000300
2092 002136 000240
2093 002140 000000
2094 002142 000001
2095 002144 000000
2096 002146 000000
2097
2098
2099 002150
2100 002150

```

CVCLHC DPV-11 DATA COMM. LINK TEST  
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DEFAULT HARDWARE P-TABLE

```

2101
2102
2103
2104
2105          .SBTTL GLOBAL EQUATES SECTION
2106
2107
2108
2109
2110          ;++
2111          ; THE GLOBAL EQUATES SECTION CONTAINS PROGRAM EQUATES THAT
2112          ; ARE USED IN MORE THAN ONE TEST.
2113          ;--
2114
2115
2116          002150          EQUALS
2117          ;
2118          ; BIT DIFINITIONS
2119          ;
2120          100000          BIT15== 100000
2121          040000          BIT14== 40000
2122          020000          BIT13== 20000
2123          010000          BIT12== 10000
2124          004000          BIT11== 4000
2125          002000          BIT10== 2000
2126          001000          BIT09== 1000
2127          000400          BIT08== 400
2128          000200          BIT07== 200
2129          000100          BIT06== 100
2130          000040          BIT05== 40
2131          000020          BIT04== 20
2132          000010          BIT03== 10
2133          000004          BIT02== 4
2134          000002          BIT01== 2
2135          000001          BIT00== 1
2136          ;
2137          001000          BIT9== BIT09
2138          000400          BIT8== BIT08
2139          000200          BIT7== BIT07
2140          000100          BIT6== BIT06
2141          000040          BIT5== BIT05
2142          000020          BIT4== BIT04
2143          000010          BIT3== BIT03
2144          000004          BIT2== BIT02
2145          000002          BIT1== BIT01
2146          000001          BIT0== BIT00
2147          ;
2148          ; EVENT FLAG DEFINITIONS
2149          ; EF32:EF17 RESERVED FOR SUPERVISOR TO PROGRAM COMMUNICATION
2150          ;
2151          000040          EF.START== 32.          ; START COMMAND WAS ISSUED
2152          000037          EF.RESTART== 31.         ; RESTART COMMAND WAS ISSUED
2153          000036          EF.CONTINUE== 30.        ; CONTINUE COMMAND WAS ISSUED
2154          000035          EF.NEW== 29.            ; A NEW PASS HAS BEEN STARTED
2155          000034          EF.PWR== 28.           ; A POWER-FAIL/POWER-UP OCCURRED
2156          ;

```

CVCLHC DPV-11 DATA COMM. LINK TEST  
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GLOBAL EQUATES SECTION

```

2157
2158
2159
2160      000340
2161      000300
2162      000240
2163      000200
2164      000140
2165      000100
2166      000040
2167      000000
2168
2169
2170
2171      000004
2172      000010
2173      000020
2174      000040
2175      000100
2176      000200
2177      000400
2178      001000
2179      002000
2180      004000
2181      010000
2182      020000
2183      040000
2184      100000
2185

```

```

;
; PRIORITY LEVEL DEFINITIONS
;
PRI07== 340
PRI06== 300
PRI05== 240
PRI04== 200
PRI03== 140
PRI02== 100
PRI01== 40
PRI00== 0
;
; OPERATOR FLAG BITS
;
EVL==      4
LOT==     10
ADR==     20
IDU==     40
ISR==    100
UAM==    200
BOE==    400
PNT==   1000
PRI==   2000
IXE==   4000
IBE==  10000
IER==  20000
LOE==  40000
HOE== 100000

```

CVCLHC DPV-11 DATA COMM. LINK TEST  
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GLOBAL EQUATES SECTION

```

2186          ;***** INDEPENDENT EQUATES
2187
2188          001000          BUFLIM=512.          ;MAX BUFFER SIZE IN BYTES
2189
2190          000017          MSGLIM=15.          ; APPLIES TO TX,RX AND CMP BUFFS
2191
2192
2193
2194
2195
2196          ;MODE OF OPERATION EQUATES
2197          000000          REC=0          ;RECEIVE MODE
2198          000001          TRA=1          ;TRANSMIT MODE
2199          000002          PAS=2          ;PASSIVE MODE
2200          000003          ACT=3          ;ACTIVE MODE
2201          000004          DOW=4          ;DOWN-LINE-LOAD MODE
2202          000005          TAL=5          ;TALK MODE
2203          000006          LIS=6          ;LISTEN MODE
2204
2205          ;MAINT LOOP TYPE EQUATES
2206          000000          NONE= 0          ;NO LOOP
2207          000001          TTL= 1          ;INTERNAL TTL
2208          000002          CABLE= 2          ;CABLE LOOP
2209          000003          MODLOC= 3          ;MODEM LOCAL
2210          000004          MODREM= 4          ;MODEM REMOTE
2211          000005          MOP= 5          ;MOP
2212
2213          ;CLOCK ENABLE VALUES TO BE LOADED IN CLK'S CSR
2214          000100          LCLKEN= 100          ;L-CLOCK CSR VALUE TO ENABLE THE CLOCK
2215          000111          PCLKEN= 111          ;P-CLOCK CSR VALUE TO ENABLE THE CLOCK
2216          001600          PCLKCT= 1600          ;P-CLOCK COUNT SET REGISTER FOR COUNTER
2217
2218          ;PARAM WORD EQUATES
2219
2220          000001          STATB= BIT0          ;OPERATOR AWAKE ASKED FOR
2221          000002          DATCKB= BIT1          ;DATA CHECK BIT
2222          000004          ECHOB= BIT2          ;ECHO BIT
2223          000010          MOCHK= BIT3          ;MODEM STATUS CHECK BIT
2224          000020          CRCB= BIT4          ;CRC CALCUALTE ASKED FOR
2225          000040          PROTOB= BIT5          ;PROTOCOL PROCESSING ASKED FOR
2226          000100          PRORUN= BIT6          ;DDCMP PROTOCOL RUNNING
2227          000200          ABORT= BIT7          ;FATAL PROTOCOL ERROR
2228
2229          ;OPTION TYPE EQUATES
2230
2231
2232          000000          DPV= 0          ;CODE FOR DPV CHAR MODE
2233
2234          ;EVENT LOG MESSAGE TYPES (USED TO LOCATE EVENT DESCRIPTION IN EVENT TABLE
2235          ; AND DISPATCHING TO SEPERATE SECTIONS OF THE EVENT REPORTING SECTION)
2236          000000          TXQ= 0          ;TRANSMIT MESSAGE QUEUED
2237          000002          TXC= 2          ;TRANSMIT COMPLETE
2238          000004          RXQ= 4          ;RECEIVE BUFFER QUEUED
2239          000006          RXC= 6          ;RECEIVE COMPLETE
2240          000010          DER= 10          ;DEVICE INFORMATION
2241          000012          DVI= 12          ;DEVICE ABOUT TO INIT

```

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GLOBAL EQUATES SECTION

```

2242      000014      DCK=   14      ;DATA COMPARISON RESULTS
2243      000016      MSC=   16      ;MODEM STATUS CHANGE
2244      000020      DLE=   20      ;DATA COMPARISON LENGH ERROR
2245      000022      DDE=   22      ;DATA COMPARISON DATA ERROR
2246      000024      EOP=   24      ;END OF PASS
2247      000026      ABO=   26      ;^C ABORT
2248
2249      ;EQUATES FOR FLAG WORD
2250
2251      000001      ININT= BIT0      ;INPUT INT. REC.
2252      000002      OTINT= BIT1      ;OUTPUT INT REC
2253      000004      QRX=   BIT2      ;RX QUED /COMPL
2254      000010      QTX=   BIT3      ;TX QUED/COMPL
2255      000100      ERX=   BIT6      ;EXPECT TO GET A RX COMPLETED
2256      000200      ETX=   BIT7      ;EXPECT TO GET A TX COMPLETED
2257
2258
2259      000020      TXM=   BIT4      ;INDICATES TO TX INTERRUPT ROUTINE
2260      ;THAT IT IS TIME TO TRANSMIT BODY OF MSG.
2261      000040      RXM=   BIT5      ;INDICATES TO RX INTERUPPT ROUTINE
2262      ;THAT IT IS TIME TO REC MSG BODY
2263      000400      BCC=   BIT8      ;TIME FOR CRC CHECK.
2264
2265      001000      PAD=   BIT9      ;INDICATES THAT PAD MUST BE SENT
2266
2267      002000      INOVR= BIT10     ;INIT OVER
2268
2269      004000      FIRST= BIT11     ;FIRST TIME FOR CTS
2270
2271      ; SPECIAL CLI CODES FOR "CHAR" ARGUMENT IN CLI CALLS
2272      ; (COMMAND LINE INTERPRETER DEFINITIONS)
2273      000000      CLIERR= 0
2274      000001      CLIEXI= 1
2275      000002      CLIBR= 2
2276      000003      CLIBIF= 3
2277      000004      CLISPA= 4
2278      000005      CLINUM= 5
2279      000006      CLIALP= 6
2280      000007      CLIALN= 7
2281      000010      CLIOCT= 8.
2282      000011      CLIDEC= 9.
2283      000012      CLISTR= 10.
2284
2285      ; DEFS FOR COMMAND LINE INTERPRETATION ACTION VALUES
2286      000000      NULL=0
2287      000001      CLEAR=1
2288      000002      SHOW=2
2289      000003      CHECK=3
2290      000004      RUN=4
2291      000005      HLP=5
2292      000006      CSHEXP=6
2293      000007      CSHTRN=7
2294      000010      SETEXP=10
2295      000011      SETTRN=11
2296      000012      SIZE=12
2297      000013      QCOPY=13

```

CVCLHC DPV-11 DATA COMM. LINK TEST  
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GLOBAL EQUATES SECTION

```

2298      000014      NUM=14
2299      000015      OPRMSG=15
2300      000016      STATUS=16
2301      000017      ENDQ0=17
2302      000020      CMSG0=20
2303      000021      CMSG1=21
2304      000022      CMSG2=22
2305      000023      CMSG3=23
2306      000024      CMSG4=24
2307      000025      CMSG5=25
2308      000026      CMSG6=26
2309      000027      ATVMOD=27
2310      000030      PASM0D=30
2311      000031      RECM0D=31
2312      000032      LISMOD=32
2313      000033      DLLMOD=33
2314      000034      TRAM0D=34
2315      000035      TALMOD=35
2316      000036      NO=36
2317      000037      ECHO=37
2318      000040      CRC=40
2319      000041      PROTO=41
2320      000042      PASC=42
2321      000043      MOP=43
2322      000044      TTLLOP=44
2323      000045      CBLLOP=45
2324      000046      LMDLOP=46
2325      000047      RMDLOP=47
2326      000050      NOTNUF=50
2327      000051      BADCHR=51
2328      000052      DMPS=52
2329      000053      DMPE=53
2330      000054      DMPQ=54
2331      000055      PRNT=55
2332      000056      MOSC=56
2333      000057      EXIT=57      ;REV B BY EC
2334      000060      SETET=60      ;REV B BY EC
2335      ;FOLLOWING EQUATES USED IN REPORT CLI ; REV B EC
2336      000001      RPHLP=1
2337      000002      RPEXT=2
2338      000003      RPLOG=3
2339      000004      RPERR=4      ; 'COUNTER/ERROR'
2340      000005      RPFUL=5      ; 'COUNTER/FULL'
2341      000006      RNOTNF=6      ; MORE COMMAND NEEDED
2342      000007      RPSWO=7      ; VALIDATE OFFSET
2343
2344
2345      ;***** DEVICE DEPENDENT EQUATES
2346      ; MODEM SIGNAL BIT DEFINITIONS
2347      ; IF SIGNAL AVAILABLE IN DEVICE, EQUATE NAME TO BIT POSITION.
2348      ; ELSE EQUATE IT TO = 0
2349
2350      020000      CTS=      BIT13      ; CLEAR TO SEND (CIRCUIT CB)
2351      001000      DSR=      BIT9       ; DATA SET READY (CIRCUIT CC)
2352      010000      DCD=      BIT12     ; DATA CARRIER DETECT (CIRCUIT CF)
2353      000004      RTS=      BIT2       ; REQUEST TO SEND (CIRCUIT CA)

```

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GLOBAL EQUATES SECTION

2354	040000	RI=	BIT14	;RING INDICATOR (CIRCUIT CE)
2355	000040	SQD=	BIT5	;SIGNAL QUALITY DETECT (CIRCUIT CG)
2356	000040	TM=	BIT5	;MODEM IN TEST MODE (RS 449 ONLY CIRCUIT YM)
2357				
2358				
2359				
2360				
2361	000002	; DEVICE SIGNALS		
2362	000020	DTR=	BIT1	;DATA TERMINAL READY
2363	000040	RXENA=	BIT4	;RECEIVER ENABLE
2364	000100	DSITEN=	BIT5	;DATA SET CHANGE ENABLE
2365	000200	RINTEN=	BIT6	;REC INT. ENABLE
2366	002000	RDATRY=	BIT7	;REC DATA READY
2367	004000	RSTARY=	BIT10	;REC STATUS READY
2368	000001	RXACT=	BIT11	;REC ACTIVE
2369	000002	RESET=	BIT0	;MASTER RESET
2370	000004	TXACT=	BIT1	;TX ACTIVE
2371	000010	TEMT=	BIT2	;TX BUFFER EMPTY
2372	000020	TTLL=	BIT3	;TTL LOOP BIT
2373	000100	TXENA=	BIT4	;TX ENABLE
2374	000400	TINTEN=	BIT6	;TX INT ENABLE
2375	001000	TSOM=	BIT8	;TX START OF MSG.
2376	100000	TEOM=	BIT9	;TX END OF MSG.
2377	100000	TERR=	BIT15	;TX ERROR
2378	000226	RERR=	BIT15	;REC OVER RUN
2379	100000	SYN=	226	;SYNC WORD
2380	004000	CRCOK=	BIT15	;CRC CHECKED GOOD
2381		RXOVER=	BIT11	;RECEIVER OVERRUN ERROR

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GLOBAL DATA SECTION

2382  
2383  
2384  
2385  
2386  
2387  
2388  
2389  
2390  
2391  
2392 002150  
2393 002150 000001  
2394 002152 000001  
2395 002154 000001  
2396 002156 000001  
2397 002160 000100  
2398 002162 000072  
2399 002164 000101  
2400 002166 000000  
2401 002170 000001  
2402  
2403  
2404  
2405 002172  
2406 002172 002214  
2407 002174 002215  
2408 002176 002216  
2409 002200 002217  
2410 002202 002220  
2411 002204 002320  
2412 002206 002412  
2413 002210 002520  
2414 002212 002642  
2415  
2416 002214 000  
2417 002215  
2418 002215 377  
2419 002216  
2420 002216 252  
2421 002217  
2422 002217 125  
2423 002220  
2424 002220  
2425 002220 177603 157427 031011  
2426 002226 047321 163715 105221  
2427 002234 143325 142304  
2428 002240 040041 014116 052606  
2429 002246 172334 105025 123754  
2430 002254 111337 111523  
2431 002260 030030 145064 137642  
2432 002266 143531 063617 135075  
2433 002274 066730 026575  
2434 002300 052012 053627 070071  
2435 002306 151172 165044 031605  
2436 002314 166632 016741  
2437 002320

.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

DMSGCT:  
MSG0C: .WORD EMSG0-MSG0 ;BYTE COUNT OF MESSAGE #0  
MSG1C: .WORD EMSG1-MSG1 ;BYTE COUNT OF MESSAGE #1  
MSG2C: .WORD EMSG2-MSG2 ;BYTE COUNT OF MESSAGE #2  
MSG3C: .WORD EMSG3-MSG3 ;BYTE COUNT OF MESSAGE #3  
MSG4C: .WORD EMSG4-MSG4 ;BYTE COUNT OF MESSAGE #4  
MSG5C: .WORD EMSG5-MSG5 ;BYTE COUNT OF MESSAGE #5  
MSG6C: .WORD EMSG6-MSG6 ;BYTE COUNT OF MESSAGE #6  
OPCNT: .WORD 0 ;BYTE COUNT FOR OPERATOR SPEC'D MSG.  
MSG8C: .WORD EMSG8-MSG8 ;BYTE COUNT OF RECEIVE BUFFER FILL PATTERN

:MESSAGE ADDRESS TABLE

DMSGAD:  
MSG0 ;ADDRESS OF MESSAGE #0  
MSG1 ;ADDRESS OF MESSAGE #1  
MSG2 ;ADDRESS OF MESSAGE #2  
MSG3 ;ADDRESS OF MESSAGE #3  
MSG4 ;ADDRESS OF MESSAGE #4  
MSG5 ;ADDRESS OF MESSAGE #5  
MSG6 ;ADDRESS OF MESSAGE #6  
OPBUF ;ADDRESS OF OPERATOR SPEC'D MSG.  
MSG8 ;ADDRESS OF RECEIVE BUFFER FILL PATTERN

MSG0: .BYTE 000 ;MESSAGE OF ALL 0'S  
EMSG0:  
MSG1: .BYTE 377 ;MESSAGE OF ALL 1'S  
EMSG1:  
MSG2: .BYTE 252 ;MESSAGE OF ALTERNATING 1'S  
EMSG2:  
MSG3: .BYTE 125 ;MESSAGE OF ALTERNATING 0'S  
EMSG3:  
MSG4: .WORD 177603,157427,031011,047321,163715,105221,143325,142304 ;'CCITT' 512-BIT (VS. 511 BITS) TEST PATTERN

.WORD 040041,014116,052606,172334,105025,123754,111337,111523  
.WORD 030030,145064,137642,143531,063617,135075,066730,026575  
.WORD 052012,053627,070071,151172,165044,031605,166632,016741

EMSG4:

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DEFAULT MESSAGE DEFINITIONS AND TABLES

2438 002320  
2439  
2440 002320 077577 040444 052040  
2441 002326 042510 050440 044525  
2442 002334 045503 041040 047522  
2443 002342 047127 043040 054117  
2444 002350 045040 046525 042520  
2445 002356 020104 053117 051105  
2446 002364 052040 042510 046040  
2447 002372 055101 020131 047504  
2448 002400 027107  
2449 002402 005015 077401 077577  
2450 002410 000177  
2451 002412  
2452 002412  
2453 002412 022043 021041 023040  
2454 002420 024047 025051 026053  
2455 002426 027055 030460 031462  
2456 002434 032464 033466 034470  
2457 002442 035472 036474 037476  
2458 002450 040500 041502 042504  
2459 002456 043506 044510 045512  
2460 002464 046514 047516 050520  
2461 002472 051522 052524 053526  
2462 002500 054530 132  
2463 002503 057 056133 057135  
2464 002510 022537 000  
2465 002513  
2466 002514  
2467  
2468  
2469  
2470  
2471 002514 047045 040445  
2472 002520 000122  
2473 002642  
2474  
2475  
2476  
2477  
2478 002642 033  
2479 002643  
2480 002644

MSG5: ;'INTERPROCESSOR TEST PROGRAM'S (ITEP)'' MESSAGE  
; #1, (DP1:)  
.ASCII <177><177>/SA THE QUICK BROWN FOX JUMPED OVER THE LAZY DOG./

.ASCIZ <15><12><001><177><177><177><177>

EMSG5:  
MSG6: ;ALPHA-NUMERICS (OR FUTURE COMM TURNAROUND MSG)  
.ASCII /#&' ' &' ( ) \* + , - . 0 1 2 3 4 5 6 7 8 9 ; < = > ? @ A B C D E F G H I J K L M N O P Q R S T U V W X Y Z /

.ASCIZ ?/[ \ ] ^ \_ % ?

EMSG6:  
.EVEN

; \*\*\*\*\*  
; THESE THREE STORAGE AREAS MUST NOT BE SEPERATED !!!!

OPBFPT: .ASCII /%N%A/  
OPBUF: .BLKB 82. ;BUFFER FOR OPERATOR SPEC'D MESSAGES  
OPEND:

; THE ABOVE THREE LINES MUST BE KEPT TOGETHER  
; \*\*\*\*\*

MSG8: .BYTE 33 ;RECEIVE BUFFER FILL PATTERN  
EMSG8:  
.EVEN

CVCLHC DPV-11 DATA COMM. LINK TEST  
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 DEFAULT MESSAGE DEFINITIONS AND TABLES

2481  
 2482  
 2483  
 2484  
 2485  
 2486  
 2487 002644 000  
 2488 002645 201  
 2489 002646  
 2490 002646 000000  
 2491 002650 001  
 2492 002651 001  
 2493 002652 001  
 2494 002653  
 2495 002654  
 2496 002654 000006  
 2497  
 2498 002656 000  
 2499 002657 201  
 2500 002660  
 2501 002660 000000  
 2502 002662 001  
 2503 002663 001  
 2504 002664 001  
 2505 002666  
 2506

```

    .....
    ; THE FOLLOWING 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
    HDMSG: .BYTE 0 ; FILLER
    HDMID: .BYTE 201 ; MESSAGE TYPE STORED HERE
    HDMTYP: ; IF CONTROL MESSAGE, TYPE IS STORED HERE
    HDMCC: .WORD 0 ; CHAR COUNT GOES HERE
    HDMREP: .BYTE 1 ; RESPONSE NUMBER
    HDMNUM: .BYTE 1 ; MSG. NUMBER
    HDMADR: .BYTE 1 ; ADDR TO.
    HSMSE:
  
```

```

    .EVEN
    HDMC: .WORD 6
    ; RECEIVED HEADER WILL BE STORED HERE
    RHDMMSG: .BYTE 0 ; MESSAGE TYPE GOES IN HERE
    RHD MID: .BYTE 201 ; CONTROL MESSAGE TYPE GOES HERE
    RHDTYP: ; BYTE COUNT GOES HERE
    RHDMCC: .WORD
    RHDREP: .BYTE 1 ; RESP NUM
    RHDNUM: .BYTE 1 ; MSG NUM
    RHDADR: .BYTE 1 ; ADDR TO.
    .EVEN
  
```

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DEFAULT MESSAGE DEFINITIONS AND TABLES

```

2507 ;COMMAND LINE BUFFER, DATA LOCATIONS AND MESSAGES FOR ACTION ROUTINES
2508
2509 002666 000122 CMDBUF: .BLKB 82. ;BUFFER FOR OPERATOR COMMANDS
2510 003010 000000 KEYWD1: .WORD 0 ;THIS LOC WILL =1 IF CLEAR TYPED, 2 FOR SHOW,
2511 ; A 4 IF RUN WAS TYPED, 5 IF HELP WAS TYPED
2512 003012 000000 QUALFG: .WORD 0 ;THIS LOC HOLDS QUALIFIER VALUE (SIZE OR COPY)
2513 003014 000000 QUALVL: .WORD 0
2514 003016 012300 HLPTAB: .WORD HLP1
2515 003020 012313 .WORD HLP2
2516 003022 012430 .WORD HLP3
2517 003024 012515 .WORD HLP3A
2518 003026 012542 .WORD HLP4
2519 003030 012621 .WORD HLP4A
2520 003032 012677 .WORD HLP5
2521 003034 012767 .WORD HLP6
2522 003036
2523 HLPEND:
2524 ;INDEX TABLE FOR REPORT 'RPT>' HELP MESSAGES REV B EC
2525 003036 013124 RHLPTB: .WORD RHLP1
2526 003040 013146 .WORD RHLP2
2527 003042 013201 .WORD RHLP3
2528 003044 013232 .WORD RHLP4
2529 003046 013264 .WORD RHLP5
2530 003050 013327 .WORD RHLP6
2531 RHLPEN:
2532 003052 013543 013552 013557 SHTYTB: .WORD SHTYP0,SHTYP1,SHTYP2,SHTYP3,SHTYP4,SHTYP5,SHTYP6,SHTYP7
2533 003060 013564 013571 013577
2534 003066 013604 013612
2535
2536 ; THE LIST OF BYTES BELOW ARE THE FIRST BYTES OF THE PREDEFINED MESSAGES
2537 ; USED TO 'SHOW' THE TRANSMIT AND COMPARE BUFFER CONTENTS.
2538
2539 003072 000 377 252 SHTAB: .BYTE 0,377,252,125,203,177,043
2540 003075 125 203 177
2541 003100 043
2542 003101
2543 003102 SHTEND:
2544 .EVEN
2545 003102 013623 MODES: .WORD M00 ;ADDRESSES OF MODE TYPES IN ASCII
2546 003104 013633 .WORD M01
2547 003106 013644 .WORD M02
2548 003110 013654 .WORD M03
2549 003112 013663 .WORD M04
2550 003114 013700 .WORD M05
2551 003116 013705 .WORD M06
2552
2553 003120 013714 LOOPS: .WORD LP0 ;ADDRESSES OF LOOP TYPES IN ASCII
2554 003122 013724 .WORD LP1
2555 003124 013735 .WORD LP2
2556 003126 013743 .WORD LP3
2557 003130 013756 .WORD LP4
2558
2559 ;COMMAND LINE TRAVERSE LOCATIONS (USED BY 'P$TRV')
2560
2561 003132 000000 P$BUFA: .WORD 0 ;LOC. TO HOLD ADDR. OF CMD LINE BUFFER
2562 003134 000000 P$TREE: .WORD 0 ;LOC. TO HOLD ADDR. OF PARSING TREE

```

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2563	003136	000000	P\$ACT:	.WORD	0	;LOC. TO HOLD ADDR. OF ACTION ROUTINE
2564	003140	000000	P\$CNT:	.WORD	0	;LOC. TO BE A COUNTER LOCATION
2565	003142	000000	P\$NUM:	.WORD	0	;LOC. TO HOLD NUMERIC VALUE FROM PARSE
2566	003144	000000	P\$RADX:	.WORD	0	;LOC. TO HOLD RADIX USED(LO) AND +/- (HI BYTE)
2567	003146	000	P\$NNUF:	.BYTE	0	;RETURN =0 IF ENOUGH OF COMMAND FOUND
2568	003147	000	P\$GDBD:	.BYTE	0	;RETURN CODE 0 IF NO ERROR FOUND
2569						

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MESSAGE BUFFERS AND POINTER TABLES

```

2570      .SBTTL      MESSAGE BUFFERS AND POINTER TABLES
2571
2572 003150 001000  TXBUF:  .BLKB  BUFLIM  :TRANSMITTER BUFFERS
2573 004150 001000  RXBUF:  .BLKB  BUFLIM  :RECEIVER BUFFERS
2574 005150 001000  CMPBUF: .BLKB  BUFLIM  :COMPARISON BUFFERS
2575 006150 000036  PTRTAB: .BLKW  MSGLIM*2 ;TABLE FOR MESSAGE ADDRS. & BYTE COUNTS
2576 006244 000036  PTR13:  .BLKW  MSGLIM*2
2577 006340 000036  PTR23:  .BLKW  MSGLIM*2
2578 006434          PTREND:          ; END OF MSG. PTR. TABLE
2579
2580 006434 000002          .BLKW  2          ;FILLER FOR OVERFLOW OF RX POINTER TABLE
2581
2582 006440 000000  RXPTR:  .WORD  0          ;RECEIVER MESSAGE POINTER
2583 006442 000000  TXPTR:  .WORD  0          ;TRANSMITTER BUFFER POINTER
2584 006444 000000  CMPPTR: .WORD  0          ;COMPARISON BUFFER POINTER
2585 006446 000000  CMPTOT: .WORD  0          ;CMP MSG TOTAL
2586 006450 000000  CTOTCC: .WORD  0          ;COMPARE BUFFER CHAR. COUNT
2587 006452 000000  CCURAD: .WORD  0          ;CURRENT ADDR OF CMP BUFF TO ADD AT
2588
2589 006454 000000  DVTXA:  .WORD  0          ;DEVICE TX ADDR
2590 006456 000000  DVTCC:  .WORD  0          ;DEVICE TX CHAR COUNT
2591 006460 000000  DVTCT:  .WORD  0          ;DEVICE TX MESSAGE COUNT
2592 006462 000000  TXMTOT: .WORD  0          ;TX MSG TOTAL
2593 006464 000000  TTOTCC: .WORD  0          ;TX BUFFER CHAR. COUNT
2594 006466 000000  TCURAD: .WORD  0          ;CURRENT ADDR. OF TX BUFF TO ADD AT
2595
2596 006470 000000  DVRXA:  .WORD  0          ;DEVICE RX ADDR
2597 006472 000000  DVRCC:  .WORD  0          ;DEVICE RX CHAR COUNT
2598 006474 000000  DVRCT:  .WORD  0          ;DEVICE RX MESSAGE COUNT
2599 006476 000000  RXMTOT: .WORD  0          ;RX MSG TOTAL
2600
2601 006500 000000  LNCNT:  .WORD  0          ;NUMBER OF OPERATOR AWAKE MSGS
2602 006502 000000  OPVAR:  .WORD  0          ;OPTIONAL VARIABLE LOCATION
2603 006504 000000  PSCNT:  .WORD  0          ;PASS COUNTER
2604 006506 000000  ERRCNT: .WORD  0          ;ERROR COUNTER
2605 006510 000000  STADD:  .WORD  0          ;START ADDR.
2606 006512 000000  ENADD:  .WORD  0          ;END ADDR. FOR DUMP
2607 006514 000000  BYTBIT: .WORD  0          ;BYTE BIT FOR DUMP ROUTINE
2608
2609      ;OTHER MESSAGE RELATED STORAGE LOCATIONS
2610
2611 006516 000000  MSGTYP: .WORD  0          ;TYPE OF DATA 0=0'S,1=1'S,2=10'S,3=01'S
2612          ;4=CCITT,5=QUICK FOX,6=ALPHA/NUM,7=OPER
2613 006520 000000  CURCC:  .WORD  0          ;TX/RX/CMP CHAR COUNT
2614 006522 000000  CPTRR:  .WORD  0          ;CURRENT RX POINTER
2615 006524 000000  CPTR:   .WORD  0          ;CURRENT POINTER
2616 006526 000000  CURADD: .WORD  0          ;CURRENT TX/RX/CMP START ADDD
2617 006530 000000  TOTCC:  .WORD  0          ;TOTAL CHAR COUNT NOT MORE THEN 'BUFLIM'
2618 006532 000000  OFFSET: .WORD  0          ;OFFSET COUNT
2619 006534 000000  TEMP:   .WORD  0          ;TEMPORARY LOCATIONS (USED A LOT)
2620 006536 000000  TEMP1:  .WORD  0
2621 006540 000000  TEMP2:  .WORD  0
2622 006542 000000  TEMP3:  .WORD  0
2623 006544 000000  TEMP4:  .WORD  0
2624 006546 000000  TEMP5:  .WORD  0
2625 006550 000000  CONOTM: .WORD  0          ;CONTROL OUT ERROR MSG. ADDRESS

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MESSAGE BUFFERS AND POINTER TABLES

2626 006552 000000  
2627 006554 000  
2628 006555 000  
2629

CONTIN: .WORD 0 :WORD FOR CONTROL IN  
GOOD: .BYTE 0 :BYTE TO HOLD EXPECTED MESSAGE DATA BYTE FOR ERR REPORT  
BAD: .BYTE 0 :BYTE TO HOLD RECEIVED MESSAGE DATA EYTE FOR ERR REPORT

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2630 ;MORE INDEPENDENT CODE STORAGE LOCATIONS
2631
2632 006556 000000 LOGUNT: .WORD 0 ;LOC. TO HOLD LOGICAL UNIT NUMBER
2633 006560 000000 PCADD: .WORD 0 ;LOC. HOLD PC OF CALLING ROUTINE
2634 006562 000000 DCLFLG: .WORD 0 ;CLEANUP & EXIT FLAG -1 = EXIT TEST
2635 006564 000000 RESFLG: .WORD 0 ;LOC TO HOLD FLAG (-1) THAT A RESTART WAS GIVEN
2636 006566 000000 MODTYP: .WORD 0 ;DCLT MODE OF OPERATION TYPE
2637 ; (0=REC-ONLY, 1=TX-ONLY, 2=PASSIVE-LOOPBK,
2638 ; 3=ACTIVE-LOOPBK, 4=DOWN L.L., 5=TALK, 6=LISTEN)
2639 006570 000000 MLTYP: .WORD 0 ;MAINTENANCE LOOP TYPE (0=NONE, 1=INTERNAL TTL,
2640 ; 2=CABLE, 3=MODEM-ANALOG LOOPBK (LOCAL),
2641 ; 4=MODEM-DIGITAL LOOPBK (REMOTE), 5=MOP)
2642 006572 000000 FHDPLX: .WORD 0 ;FULL OR HALF DUPLEX FLAG (1=FULL FROM P-TABLE)
2643 006574 000002 PARAM: .WORD 2 ;PROGRAM PARAMETERS
2644 ; BIT0= STATUS MSGS TO OPR PRINTED (1=YES)
2645 ; BIT1= DATA CHECKING DONE ON RCVD MSGS (1=YES)
2646 ; BIT2= ECHO (TRANSMIT) RCV'D MSG. (PASSIVE) (1=YES)
2647 ; BIT3= MODEM STATUS CHECK (1=YES)
2648 ; BIT4= CRC CALC./CHECK DONE (1=YES)
2649 ; BIT5= PROTOCOL EMULATION (1=YES)
2650 ; BIT6= PROTOCOL IS RUNNING
2651 ; BIT7= ABORT PROTOCOL
2652 006576 000000 RPASS: .WORD 0 ;PASS NUMBER FROM RUN COMMAND
2653 006600 000000 FLAG: .WORD 0 ;DEVICE FLAG WORD
2654
2655 ;MODE DISPATCH TABLE
2656 006602 032206 MODE: .WORD RXONLY ;RX ONLY DISPATCH
2657 006604 032240 .WORD TXONLY ;TX ONLY DISPATCH
2658 006606 032300 .WORD PLCK ;PASSIVE LOOP BACK DISP
2659 006610 032334 .WORD ALCK ;ACTIVE LOOP BACK DISP
2660 006612 033566 .WORD DLL ;DOWN LINE LOAD DISP
2661 006614 033612 .WORD TALCK ;TALK MODE DISPATCH
2662 006616 034056 .WORD LISCK ;LISTEN MODE DISPATCH
2663
2664
2665 .SBTTL CLOCK TABLES, EVENT LOG AND POINTERS
2666 006620 000000 CLKCSR: .WORD 0 ;CLOCK CSR ADDRESS
2667 006622 000000 CLKBR: .WORD 0 ;CLOCK INTERRUPT LEVEL
2668 006624 000000 CLKVEC: .WORD 0 ;CLOCK INTERRUPT VECTOR
2669 006626 000074 CLKHZ: .WORD 60. ;CLOCK'S HERTZ RATE
2670 006630 000000 CLKEN: .WORD 0 ;CLOCK'S CSR VALUE TO INTRPT. ENABLE IT
2671
2672 006632 000000 TIMMIN: .WORD 0 ;PLACE TO KEEP TIME-SINCE-START
2673 006634 000000 TIMSEC: .WORD 0
2674 006636 000000 TIMTCK: .WORD 0 ;PLACE TO KEEP # OF TICKS/SEC
2675
2676 006640 000000 TIMER1: .WORD 0 ;EVENT TIMER #1 (TICKS)
2677 006642 000000 TIMER2: .WORD 0 ;EVENT TIMER #2 (TICKS)
2678 006644 000000 TIMERS: .WORD 0 ;EVENT TIMER #3 (SECONDS)
2679

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 CLOCK TABLES, EVENT LOG AND POINTERS

2680					
2681	006646	006650			
2682	006650	000341			
2683	007552	000001			
2684					
2685					
2686					
2687	007554	000000			
2688					
2689					

;EVENT LOG TABLE AND ITS NEXT ENTRY POINTER  
 EVTPTL: .WORD EVTLOG ; POINTER TO NEXT FREE SPACE IN EVENT LOG  
 EVTLOG: .BLKW 225. ; EVENT LOG BUFFER  
 EVTEND: .BLKW 1. ; APPROXIMATE END OF EVENT TABLE (ALLOWS CIRCULAR QUE)  
  
 .SBTTL MODEM DATA SECTION  
 MODS: .WORD 0 ; MODEM STATUS

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MODEM DATA SECTION

```

2690
2691
2692
2693 007556 020000
2694 007560 001000
2695 007562 010000
2696 007564 000004
2697 007566 040000
2698 007570 000040
2699 007572 000040
2700 007574
2701
2702
2703
2704 007574 016477
2705 007576 016503
2706 007600 016507
2707 007602 016513
2708 007604 016517
2709 007606 016523
2710 007610 016527
2711
2712
2713
2714
2715 007612 015101
2716 007614 015125
2717 007616 015154
2718 007620 015201
2719 007622 015227
2720 007624 015274
2721 007626 015244
2722 007630 015426
2723 007632 015322
2724 007634 015357
2725 007636 015412
2726 007640 015452
2727
2728
2729
2730 007642 000000
2731 007644 000000
2732 007646 000000
2733 007650 000000
2734 007652 000000
2735 007654 000000
2736
2737
2738
2739 007656 022276
2740 007660 022276
2741 007662 022276
2742 007664 022276
2743 007666 022350
2744 007670 022444
2745 007672 022640

;TABLE OF MODEM SIGNAL BIT DEFINITIONS
MOBITS: .WORD   CTS           ;CLEAR TO SEND (CIRCUIT CB)
        .WORD   DSR           ;DATA SET READY (CIRCUIT CC)
        .WORD   DCD           ;DATA CARRIER DETECT (CIRCUIT CF)
        .WORD   RTS           ;REQUEST TO SEND (CIRCUIT CA)
        .WORD   RI            ;RING INDICATOR (CIRCUIT CE)
        .WORD   SQD           ;SIGNAL QUALITY DETECT (CIRCUIT CG)
        .WORD   TM            ;MODEM IN TEST MODE (RS 449 ONLY CIRCUIT TM)
MOBITE:

;TABLE OF ADDRESSES OF MODEM SIGNAL MESSAGE POSITIONS
MOMSGS: .WORD   EVMCTS        ;CLEAR TO SEND (CIRCUIT CB)
        .WORD   EVMDSR        ;DATA SET READY (CIRCUIT CC)
        .WORD   EVMDCD        ;DATA CARRIER DETECT (CIRCUIT CF)
        .WORD   EVMRIS        ;REQUEST TO SEND (CIRCUIT CA)
        .WORD   EVMRI         ;RING INDICATOR (CIRCUIT CE)
        .WORD   EVMSQD        ;SIGNAL QUALITY DETECT (CIRCUIT CG)
        .WORD   EVMTM         ;MODEM IN TEST MODE (RS 449 ONLY CIRCUIT TM)

;TABLE OF ADDRESSES OF EVENT DESCRIPTION MESSAGES
; ORDER CORRESPONDS TO MESSAGE TYPE VALUES
EVTLST: .WORD   EDTXQ         ;TRANSMIT MESSAGE QUEUED
        .WORD   EDTXC         ;TRANSMIT OF MESSAGE COMPLETE
        .WORD   EDRXQ         ;RECEIVE MESSAGE SPACE QUEUED
        .WORD   EDRXC         ;MESSAGE RECEIVED -- RECEIVE COMPLETE
        .WORD   EDDER         ;DEVICE INFORMATION
        .WORD   EDDVI         ;DEVICE INITIALIZE STARTED
        .WORD   EDDCK         ;DATA COMPARISON DONE
        .WORD   EDMOS         ;MODEM STATUS CHANGE
        .WORD   EDDLE         ;DATA COMPARE LENGTH ERROR
        .WORD   EDDDE         ;DATA COMPARE DATA ERROR
        .WORD   EDEOP         ;END OF PASS
        .WORD   EDABO         ;^ C ABORT

;LOCATIONS USED DURING EVENT REPORTING
EVTSEC: .WORD   0             ;TEMPORARY LOCS TO KEEP EVENT TIME WHILE REPORTING
EVTMIN: .WORD   0
EVTTCK: .WORD   0
EVTADD: .WORD   0             ;TEMP. LOC. TO HOLD ADDRESS DURING EVENT REPORTING
EVTBCT: .WORD   0             ;" " " " BYTE COUNT " " " "
EVTTMP: .WORD   0             ;" " " " OTHER DATA " " " "
```

;REPORT CODING DISPATCH TABLE

```

RPTDSP: .WORD   RPTTXQ        ;TRANSMIT QUEUED ENTRY DECODING
        .WORD   RPTTXQ        ;TRANSMIT COMPLETE ENTRY DECODING
        .WORD   RPTTXQ        ;RECEIVER QUEUED ENTRY DECODING
        .WORD   RPTTXQ        ;RECEIVER COMPLETE ENTRY DECODING
        .WORD   RPTDER        ;DEVICE ERROR ENTRY DECODING
        .WORD   RPTDVI        ;DEVICE INIT ENTRY DECODING
        .WORD   RPTDCK        ;DATA COMPARISON ENTRY DECODING
```

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MODEM DATA SECTION

2746	007674	022714	.WORD	RPTMSC	:REPORT MODEM STATUS CHANGE
2747	007676	022640	.WORD	RPTDLE	:DATA COMPARISON LENGH ERROR
2748	007700	022564	.WORD	RPTDDE	:DATA COMPARISON DATA ERROR
2749	007702	022510	.WORD	RPTTEOP	:END OF PASS
2750	007704	022510	.WORD	RPTABO	:^C ABORT
2751					
2752					
2753	007706	000000	DEV1:	.WORD	0
2754	007710	000000	DEV2:	.WORD	0
2755	007712	000000	DEV3:	.WORD	0
2756	007714	000000	DEV4:	.WORD	0
2757					

;TEMP LOCS TO HOLD DATA FOR EVENT REPORTING  
; AND SHOW MODE,... SUBROUTINE

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COMMAND LINE ACTION TREE

```

2758 .SBTTL          COMMAND LINE ACTION TREE
2759
2760 ;SAMPLE CLI TREE NODE (ALWAYS AT LEAST 1 WORD)
2761 -----
2762 ! ACTION ! CHAR CODE !
2763 -----
2764 ! MISS DISPLACEMENT !          ONLY IF 'MISS' ARGUMENT DEFINED
2765 -----
2766 ! NEXT NODE DISPLMNT !        ONLY IF 'ASCII' ARGUMENT DEFINED
2767 -----
2768 ! ASCIZ MATCH STRING !        ONLY IF 'ASCII' ARGUMENT DEFINED
2769 !         (.EVEN)         !
2770 -----
2771
2772
2773 007716          CLITRE:
2774
2775 ;FIRST KEYWORD
2776 007716          CLI          CLISPA,0,N10$          ;SKIP ANY LEADING SPACES
2777 007722          N10$:      CLI          <'?'>,HLP,N42$      ;IS THE FIRST NON-SP CHAR A '?'
2778 007726          CLI          CLIEXI,0                ; IF YES DO 'HLP' AND EXIT
2779 007730          N42$:      CLI          CLISTR,HLP,N43$,<'HELP'> ;ELSE, IS FIRST WORD A 'HELP'
2780 007744          CLI          CLIEXI,0                ; IF YES DO 'HLP' AND EXIT
2781 007746          N43$:      CLI          CLISTR,PRNT,N44$,<'PRINT'> ;ELSE, IS FIRST WORD A 'PRINT'
2782 007762          CLI          CLIEXI,0                ; IF YES DO 'PRINT' AND EXIT
2783 007764          N44$:      CLI          CLISTR,EXIT,N45$,<'EXIT'> ;ELSE, IS FIRST WORD 'EXIT' ;REV B BY EC
2784 010000          CLI          CLIEXI,0                ; IF YES DO 'EXIT' AND EXIT
2785 010002          N45$:      CLI          CLISTR,RUN,N46$,<'RUN'> ;ELSE, IS FIRST WORD A 'RUN'
2786 010014          CLI          CLIBR,0,N80$            ; IF YES DO 'RUN' & GOTO N80$
2787 010015          N46$:      CLI          CLISTR,NOTNUF,N40$,<'DUMP'> ;ELSE, IS FIRST WORD A 'DUMP'
2788 010034          CLI          CLIBR,0,N50$            ; IF YES GOTO N80$
2789 010040          N40$:      CLI          CLISTR,CLEAR,N20$,<'CLEAR'> ;ELSE, IS FIRST WORD A 'CLEAR'
2790 010054          CLI          CLIBR,NOTNUF,N100$      ; IF YES DO 'CLR' & GOTO N100$
2791 010060          N20$:      CLI          <'S'>,NOTNUF,N30$ ;ELSE, IS FIRST CHAR. A 'S'
2792 010064          CLI          CLISTR,SHOW,N25$,<'HOW'> ; IF YES IS REST OF WORD 'HOW'
2793 010076          CLI          CLIBR,0,N100$          ; IF YES, DO 'SHOW',BR N100$
2794 010102          N25$:      CLI          CLISTR,0,N30$,<'ET'> ; ELSE, IS REST OF WORD 'ET'
2795 010114          CLI          CLIBR,0,N110$          ; IF YES, DO 'SET', BR N110$
2796 010120          N30$:      CLI          CLIERR,0      ;OTHERWISE 'ILL CMD' - EXIT
2797
2798 ;SECOND KEYWORD (MODE=) FOR RUN COMMAND
2799
2800 010122          N80$:      CLI          CLISPA,0,N30$          ;SKIP LEADING SPS, IF NONE-ERR
2801 010126          N81$:      CLI          CLISTR,NOTNUF,N30$,<'MODE='> ;IS NEXT WORD 'MODE='
2802 010142          CLI          <'='>,0,N30$          ; IF NO, IT'S WRONG -ERR -EXIT
2803 010146          CLI          CLISTR,ATVMOD,N82$,<'ACTIVE'> ;IS NEXT WORD 'ACTIVE'
2804 010164          CLI          CLIBR,0,N115$          ; IF YES, DO 'ACTIVE',BR N115$
2805 010170          N82$:      CLI          CLISTR,PASMOD,N83$,<'PASSIVE'> ;IS NEXT WORD 'PASSIVE'
2806 010206          CLI          CLIBR,0,N115$          ; IF YES, DO 'PASSIVE',BR N115$
2807 010212          N83$:      CLI          CLISTR,RECMOD,N84$,<'RECEIVE'> ;IS NEXT WORD 'RECEIVE'
2808 010230          CLI          CLIBR,0,N115$          ; IF YES, DO 'RECVE',BR N115$
2809 010234          N84$:      CLI          CLISTR,LISMOD,N85$,<'LISTEN'> ;IS NEXT WORD 'LISTEN'
2810 010252          CLI          CLIBR,0,N115$          ; IF YES, DO 'LISTEN',BR N115$
2811 010256          N85$:      CLI          CLISTR,DLLOD,N86$,<'DOWNLINELOAD'> ;IS NEXT WORD 'DOW...'
2812 010302          CLI          CLIBR,0,N115$          ; IF YES, DO 'DWNLL',BR N115$
2813 010306          N86$:      CLI          <'T'>,0,N30$          ;IS NEXT CHAR A 'T'

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COMMAND LINE ACTION TREE

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2814 010312          CLI      CLISTR,TRAMOD,N87$,<'RANSMIT'> ; IS REST OF WORD 'RANSMIT'
2815 010330          CLI      CLIBR,0,N115$                ; IF YES, DO 'TRANSM',BR N115$
2816 010334          N87$:  CLI      CLISTR,TALMOD,N30$,<'ALK'>    ; IS REST OF WORD 'ALK'
2817 010346          CLI      CLIBR,0,N115$                ; IF YES, DO 'TALK',BR N115$
2818                                     ; IF NO, ERROR - EXIT
2819
2820          ;SECOND KEYWORD (FOR CLEAR OR SHOW)
2821 010352          N100$: CLI      CLISPA,0,N30$
2822 010356          N102$: CLI      CLISTR,CSHEXP,N104$,<'EXPECTBUFF'> ;SKIP LEADING SPACES, NONE=ERR
2823 010400          CLI      CLIBR,0,N120$                ; IS NEXT WORD 'EXPE...'
2824 010402          N104$: CLI      CLISTR,CSHTRN,N30$,<'TRANSMITBUFF'> ; IF YES, DO CLR-EXP,EXIT
2825 010426          CLI      CLIBR,0,N120$                ; IS NEXT WORD 'TRANS...'
2826                                     ; IF YES, DO CLR-TRN,EXIT
2827                                     ; IF NO - ERROR - EXIT
2828
2829          ;SECOND KEYWORD (FOR SET)
2830 010430          N110$: CLI      CLISPA,0,N30$
2831 010434          N111$: CLI      CLISTR,SETEXP,N112$,<'EXPECT'>
2832 010452          CLI      CLIBR,0,N120$
2833 010456          N112$: CLI      CLISTR,SETTRN,N30$,<'TRANSMIT'>
2834 010476          CLI      CLIBR,0,N120$
2835
2836          ;GET ADDRESSES FOR DUMP COMMAND
2837 010502          N50$:  CLI      CLIALP,0,N51$
2838 010506          N51$:  CLI      CLISPA,0,N52$
2839 010512          N52$:  CLI      CLIOCT,DMPS,N30$
2840 010516          CLI      <'>,NOTNUF,N125$
2841 010522          CLI      CLIOCT,DMPE,N30$
2842 010526          CLI      <'>,NOTNUF,N125$
2843 010532          CLI      <'B>,DMPQ,N30$
2844 010536          CLI      CLIBR,0,N125$
2845
2846          ;QUALIFIERS FOR THE RUN COMMAND
2847 010542          N115$: CLI      CLIALP,0,N114$
2848 010546          N114$: CLI      <'>,NOTNUF,N125$
2849 010552          CLI      CLISTR,NO,N116$,<'NO'>
2850 010564          N116$: CLI      <'C>,0,N117$
2851 010570          CLI      CLISTR,CHECK,N117$,<'HECK'>
2852 010604          CLI      CLIBR,0,N115$
2853
2854
2855 010610          N117$: CLI      CLISTR,STATUS,N118$,<'STATUS'>
2856 010626          CLI      CLIBR,0,N115$
2857 010632          N118$: CLI      CLISTR,ECHO,N119$,<'ECHO'>
2858 010646          CLI      CLIBR,0,N115$
2859
2860 010652          N119$: CLI      <'P>,0,N132$
2861 010656          CLI      CLISTR,PROTO,N130$,<'ROTOCOL'>
2862 010674          CLI      CLIBR,0,N115$
2863 010700          N130$: CLI      CLISTR,0,N30$,<'ASS'>
2864 010712          CLI      CLIBR,0,N150$
2865
2866 010716          N132$: CLI      CLISTR,MOSC,N131$,<'MODEM'>
2867 010732          CLI      CLIBR,0,N115$
2868
2869 010736          N131$: CLI      CLISTR,0,N30$,<'LOOP'>

```

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COMMAND LINE ACTION TREE

```

2870 010752          CLI      CLIBR,0,N140$
2871
2872          ;GET MESSAGE TYPE FOR SET MESSAGE COMMANDS
2873 010756 N120$: CLI      <'=>,U,N30$
2874
2875          ; LOOK FOR DEFAULT MESSAGE NAME
2876 010762 N60$:  CLI      CLISTR,MSG1,N61$,<'ONES'>
2877 010776          CLI      CLIBR,0,N121$
2878 011002 N61$:  CLI      CLISTR,MSG0,N62$,<'ZEROES'>
2879 011020          CLI      CLIBR,0,N121$
2880 011024 N62$:  CLI      CLISTR,MSG2,N63$,<'1ALT'>
2881 011040          CLI      CLIBR,0,N121$
2882 011044 N63$:  CLI      CLISTR,MSG3,N64$,<'0ALT'>
2883 011060          CLI      CLIBR,0,N121$
2884 011064 N64$:  CLI      CLISTR,MSG5,N65$,<'ITEP'>
2885 011100          CLI      CLIBR,0,N121$
2886 011104 N65$:  CLI      CLISTR,MSG4,N66$,<'CCITT'>
2887 011120          CLI      CLIBR,0,N121$
2888 011124 N66$:  CLI      CLISTR,MSG6,N67$,<'ALPHA'>
2889 011140          CLI      CLIBR,0,N121$
2890 011144 N67$:  CLI      CLISTR,SETET,N68$,<'TRANSMIT'> ;REV B BY EC
2891 011164          CLI      CLIBR,0,N125$
2892
2893          ; LOOK FOR QUOTED MESSAGE
2893 011170 N68$:  CLI      <'>,OPRMSG,N30$
2894 011174 N70$:  CLI      <'>,ENDQ0,N71$
2895 011200          CLI      CLIBR,0,N121$
2896 011204 N71$:  CLI      CLISPA,0,N72$
2897 011210 N72$:  CLI      CLIALN,0,N73$          ;ONLY A-Z,SP,TAB, OR 0-9 BETWEEN ''S
2898 011214          CLI      CLIBR,0,N70$
2899 011220 N73$:  CLI      CLIERR,BADCHR          ;PRINT ERROR IF NONE LEGAL CHAR FOR ''S
2900
2901          ;GET QUALIFIERS (SIZE OR COPY) FOR SET MESSAGE COMMANDS
2902 011222 N121$: CLI      CLIALP,0,N123$
2903 011226 N123$: CLI      <'/'>,NOTNUF,N125$
2904 011232          CLI      CLISTR,SIZE,N122$,<'SIZE'>
2905 011246          CLI      CLIBR,0,N126$
2906 011252 N122$: CLI      CLISTR,QCOPY,N30$,<'COPY'>
2907 011266          CLI      CLIBR,0,N126$
2908
2909          ;NUMER FOR SIZE OR COPY
2910 011272 N126$: CLI      <'=>,0,N30$
2911 011276          CLI      CLIDEC,NUM,N30$
2912 011302          CLI      CLIBR,0,N121$
2913
2914          ;GET MAINTENANCE LOOP TYPE FOR RUN 'LOOP' QUALIFIER
2915 011306 N140$: CLI      <'=>,0,N30$
2916
2917
2918 011312 N141$: CLI      CLISTR,TTLLOP,N142$,<'INTERNALTTL'>
2919 011334          CLI      CLIBR,0,N115$
2920 011340 N142$: CLI      CLISTR,CBLOP,N143$,<'CABLE'>
2921 011354          CLI      CLIBR,0,N115$
2922 011360 N143$: CLI      CLISTR,LMDLOP,N144$,<'LOCALMODEM'>
2923 011402          CLI      CLIBR,0,N115$
2924 011406 N144$: CLI      CLISTR,RMDLOP,N30$,<'REMOTEMODEM'>
2925 011430          CLI      CLIBR,0,N115$

```

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2926  
2927  
2928 011434  
2929 011440  
2930 011444  
2931  
2932  
2933  
2934  
2935 011450  
2936

:GET LINE NUMBER FOR 'PASS' RUN QUALIFIER  
N150\$: CLI <'=>,0,N30\$  
CLI CLIDEC,PASC,N30\$  
CLI CLIBR,0,N115\$

:END-OF-LINE  
N125\$: CLI CLIEXI,0

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COMMAND LINE ACTION TREE

```

2937
2938
2939 ;DEVICE DEPENDENT STORAGE LOCATIONS FOR
2940 ; CURRENT DEVICE PARAMETERS
2941
2942
2943 011452 000000 RXCSR: .WORD 0 ;REC CONTROL AND STATUS
2944 011454 000000 PCSAR: .WORD 0 ;STATUS REGISTIER
2945 011456 000000 RDSR: .WORD 0 ;REC DATA AND STATUS REG
2946 011460 000000 TXCSR: .WORD 0 ;TRANSMIT AND REC. CONTROL
2947 011462 000000 TDSR: .WORD 0 ;TRANSMIT DATA AND STATUS REG
2948
2949
2950 011464 000000 INVEC: .WORD 0 ;INPUT INTERRUPT VECTOR ADDRESS
2951 011466 000000 OUTVEC: .WORD 0 ;OUTPUT INTERRUPT VECTOR ADDRESS
2952 011470 000000 INTPRI: .WORD 0 ;INTERRUPT PRIORITY
2953 011472 065626 DPVP1: .WORD 065626 ;THIS WORD IS BROKEN DOWN AS FOLLOWS
2954 ;BITS 0-7 =SYNC WORD
2955 ;BITS 8-10=ERR DET SELECTED
2956 ;THIS IS SET TO SYNC 262 ;BIT11 = IDLE
2957 ;CRC 16 INIT TO 1 ;BIT12 = SEC ADDR. MODE
2958 ;STRIP SYNC AND BCP MODE ;BIT13 = STRIP SYNC
2959 ;IDLE SET TO MARK ;BIT14 = PORTO TYPE SEL(1=BCP 0=BOP)
2960 ;BIT15 = ALL PARTIES ADDRESS..
2961
2962
2963 011474 000000 CMODS: .WORD 0 ;CURRENT MODEM
2964 011476 000000 IRXCSR: .WORD 0 ;IMAGE OF RXCSR
2965 011500 000000 IRDSR: .WORD 0 ;IMAGE OR RDSR
2966 011502 000000 MSGPTR: .WORD 0 ;MSG PTR.FOR HEADER OR CONTROL
2967 011504 000000 MSGCC: .WORD 0 ;MSG COUNTER OR CC
2968 011506 000000 SYNCC: .WORD 0 ;SYNC CHAR COUNT.
2969 011510 000000 SYNCW: .WORD 0 ;SYNC WORD.PLUS TSOM BIT.
2970 011512 000000 RMSGPT: .WORD 0 ;MSG PTR FOR REC
2971 011514 000000 RMSGCC: .WORD 0 ;CHAR COUNTER FOR REC
2972 011516 000000 BCCW: .WORD 0 ;CRC HOLDING LOC.
2973 011520 000000 MGLCNT: .WORD 0 ;COUNT OF GLITCH ERRORS
2974 011522 000000 MHRCNT: .WORD 0 ;COUNT OF HARD ERRORS
2975 011524 000000 RNODE: .WORD 0 ;1=REMOTE NODE ITEP,0=NON ITEP
2976
2977
2978 ; ERRtbl

```

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GLOBAL TEXT SECTION

```

2979      .SBTTL  GLOBAL TEXT SECTION
2980
2981      :++
2982      : THE GLOBAL TEXT SECTION CONTAINS FORMAT STATEMENTS,
2983      : MESSAGES, AND ASCII INFORMATION THAT ARE USED IN
2984      : MORE THAN ONE TEST.
2985      :--
2986
2987      .SBTTL          DEVICE SUPPORTED
2988      :
2989      : NAMES OF DEVICES SUPPORTED BY PROGRAM
2990      :
2991
2992
2993      DEVTYP  <DPV-11>
2994
2995      050104  026526  030461      LSDVTYP::
2996      011534      000              .ASCIZ  /DPV-11/
2997      011536              .EVEN
2998
2999
3000      .SBTTL          PROGRAM IDENTIFICATION
3001      : TEST DESCRIPTION
3002      :
3003      DESCRIPT          <DPV-11 DATA COMM LINK TEST >
3004
3005      050104  026526  030461      L$DESC::
3006      011544  042040  052101      .ASCIZ  /DPV-11 DATA COM
3007      011552  047503  046515
3008      011560  047111  020113  046040
3009      011566  052123  000040
3010
3011      .EVEN
3012
3013
3014
3015

```

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GLOBAL FORMAT STATEMENTS, MESSAGES, AND ASCII INFO

```

3016
3017
3018 011572 041504 052114 000076 CLISPM: .ASCIZ /DCLT>/
011600 050122 037124 000 CLISRP: .ASCIZ /RPT>/ ;REV B BY EC
011605 045 022516 037501 CLIERM: .ASCIZ /%N%?ILL CMD-BAD SYNTAX?/
011635 045 022516 037501 CLINUF: .ASCIZ /%N%?INCMPLTE CMD?/
011660 047045 040445 047077 CLINBG: .ASCIZ /%N%?NUM TOO BIG?/
011702 047045 040445 041077 CLIBRX: .ASCIZ /%N%?BAD RADIX?/
011722 047045 040445 021077 CLIBDL: .ASCIZ /%N%?'LOOP' VALID ONLY IN ACTIVE?/
011764 047045 040445 021077 CLINPS: .ASCIZ /%N%?'ECHO' VALID ONLY IN PASSIVE?/
012027 045 022516 037501 CLIBCR: .ASCIZ /%N%?ILL CHR- 'A-Z,0-9,SP,TAB' ONLY?/
012074 047045 040445 021077 CLISE0: .ASCIZ /%N%?'SIZE=0' NOT VALID?/
012125 045 022516 037501 CLIPW: .ASCIZ /%N%?TRANSMIT & EXPECT LIST MUST BE IDENTICAL FOR LOOP?;/REV B EC
012215 045 022516 052101 HLP0: .ASCIZ /%N%ATHIS IS DCLT. TYPE 'H' OR '?' FOR DETAILS/
012273 045 022516 000124 HLPF: .ASCIZ /%N%T/
012300 041504 052114 041440 HLP1: .ASCIZ /DCLT CMDS:/
012313 040 046103 040505 HLP2: .ASCII / CLEAR OR SHOW EXPECTLIST OR TRANSMITLIST/<15><12>
012367 040 051120 047111 .ASCII / PRINT/<15><12>
012377 040 054105 052111 .ASCII / EXIT/<15><12> ;REV B EC
012406 042040 046525 020120 .ASCIZ ? DUMP START-END/B?
012430 051440 052105 042440 HLP3: .ASCIZ ? SET EXPECTMSG OR TRANSMITMSG=TYPE/SIZE=N OR /COPY=N?
012515 040 042523 020124 HLP3A: .ASCIZ / SET EXPECT=TRANSMIT/ ;REV B EC
012542 020040 052040 050131 HLP4: .ASCIZ ? TYPE=ONES,ZERES,1ALT,0ALT,ITEP,CCITT,ALPHA?
012621 040 020040 020040 HLP4A: .ASCII / OR 'OPR SPCD=A-Z,SP,TAB,0-9 IN QUOTES'/
012677 040 052522 020116 HLP5: .ASCIZ ? RUN MODE=MTYP/LOOP=LTP/CHECK,STATUS,ECHO,MODEM,PASS=N?
012767 040 020040 052115 HLP6: .ASCII / MTYP=TRAN,REC,ACT,PAS,TAL,LIS,DOWN/<15><12>
013036 020040 046040 054524 .ASCIZ / LTP=INT,CAB,LOC,REM/

013066 047045 040445 054524 RHLP0: .ASCIZ /%N%ATYPE 'H' OR '?' FOR HELP!/ ;REV B EC
013124 041504 052114 051040 RHLP1: .ASCIZ /DCLT REPORT CMDS:/ ;REV B EC
013146 047514 020107 020055 RHLP2: .ASCIZ /LOG - PRINT DCLT EVENT LOG/ ;REV B EC
013201 105 044530 020124 RHLP3: .ASCIZ /EXIT - EXIT REPORT LEVEL/ ;REV B EC
013232 042510 050114 026440 RHLP4: .ASCIZ /HELP - PRINT THIS MESSAGE/ ;REV B EC
013264 047503 047125 042524 RHLP5: .ASCIZ ?COUNTERS/SW - PRINT DDCMP COUNTERS?
013327 127 042510 042522 RHLP6: .ASCIZ ?WHERE /SW=FULL, /ERRORS, /OFFSET=NN(O)?
013376 047045 040445 043117 RPTIV: .ASCIZ /%N%AOFFSET INVALID/
013421 045 022516 042101 RPTNV: .ASCIZ /%N%ADDCMP COUNTERS VALID ONLY WITH PROTOCOL SELECTED./
013507 045 022516 046501 SHMSG: .ASCIZ ?%N%AMSG: TYPE=%T%/SIZE=%D3?
013543 132 051105 042517 SHTYP0: .ASCIZ /ZERES/
013552 047117 051505 000 SHTYP1: .ASCIZ /ONES/
013557 046101 056101 000124 SHTYP2: .ASCIZ /1ALT/
013564 040445 052114 000 SHTYP3: .ASCIZ /0ALT/
013571 105 044503 052124 SHTYP4: .ASCIZ /CCITT/
013577 111 042524 000120 SHTYP5: .ASCIZ /ITEP/
013604 046101 044120 000101 SHTYP6: .ASCIZ /ALPHA/
013612 050117 020122 050123 SHTYP7: .ASCIZ /OPR SPEC/
013623 122 041505 041505 MO0: .ASCIZ /RECEIVE/
013633 124 040522 051516 MO1: .ASCIZ /TRANSMIT/
013644 040520 051523 053111 MO2: .ASCIZ /PASSIVE/
013654 041501 044524 042526 MO3: .ASCIZ /ACTIVE/
013663 104 053517 046116 MO4: .ASCIZ /DOWNLINELOAD/
013700 040524 045514 000 MO5: .ASCIZ /TALK/
013705 114 051511 042524 MO6: .ASCIZ /LISTEN/
013714 000 LPO: .ASCIZ //
013715 057 047514 050117 LP00: .ASCIZ ?/LOOP=?
013724 047111 042524 047122 LP1: .ASCIZ ?INTERNAL?

```

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GLOBAL FORMAT STATEMENTS, MESSAGES, AND ASCII INFO

013735	103	041101	042514	LP2:	.ASCIZ	?CABLE?
013743	114	041517	046101	LP3:	.ASCIZ	?LOCALMODEM?
013756	042522	047515	042524	LP4:	.ASCIZ	?REMOTEMODEM?
013772	047516			PNST:	.ASCII	/NO/
013774	052123	052101	051525	PST:	.ASCIZ	/STATUS/
014003	116	117		PNCK:	.ASCII	/NO/
014005	103	042510	045503	PCK:	.ASCIZ	/CHECK/
014013	116	117		PNEC:	.ASCII	/NO/
014015	105	044103	000117	PEC:	.ASCIZ	/ECHO/
014022	047516			PNMS:	.ASCII	/NO/
014024	047515	042504	000115	PMS:	.ASCIZ	/MODEM/
014032	047516			PNPR:	.ASCII	/NO/
014034	051120	052117	041517	PPR:	.ASCIZ	/PROTOCOL/
014045	045	022516	046101	LISP:	.ASCIZ	/N%ALIS>/
014056	046124	037113	000	OPRMM:	.ASCIZ	/TLK>/
014063	124	044510	020123	L5060:	.ASCIZ	/THIS A 50. OR 60. HZ. LSI-11:/
	014122					.EVEN

:  
: FORMAT STATEMENTS USED IN PRINT CALLS  
:

014122	047045	040445	047504	DLLCM:	.ASCIZ	/N%ADOWN LINE LOAD NOT SUPPORTED BY THIS DEVICE/
014202	047045	040445	046103	BDCLK:	.ASCIZ	/N%ACLOCK NOT FOUND/
014226	047045	040445	040502	NOCLK:	.ASCIZ	/N%ABAD CLOCK - PROGRAM WILL HANG ON "TIMEOUT"!!!/
014307	115	054101	020056	TABEX:	.ASCIZ	/MAX. CHAR. MSG COUNT EXCEEDED -/
014347	102	043125	042506	BUFEX:	.ASCIZ	/BUFFER FULL -/
014365	045	022516	022524	MSGTRN:	.ASCIZ	/N%T%A MSG. NOT BUILT !!!/
014416	047045	040445	044103	MSGTRU:	.ASCIZ	/N%ACHAR. COUNT EXCEEDS BUFF LIMIT - MSG TRUNCATED/
014501	045	022516	032523	SHFO:	.ASCIZ	?N%S5%AMODE=%T%T%A/PASS=%Z5?
014537	045	022516	032523	SHF1:	.ASCIZ	?N%S5%S5%S5%A/%T%A/%T%A/%T%A/%T%A/%T?
014604	051445	022465	052101	EFM2:	.ASCIZ	/S5%ATOTAL MISMATCHES IN MSG = %D5/
014647	045	022516	031523	PCPM:	.ASCIZ	/N%S3%ACALLED FROM PC=%06/
014701	045	032523	040445	EFM11:	.ASCIZ	/S5%ACOMPARE COUNT=%D5%S3%ARECEIVE COUNT=%D5/
014756	047515	042504	020115	MSCMS:	.ASCIZ	/MODEM STATUS CHANGES FOR THIS PASS WERE.. /
015030	051445	022465	044101	EFM13:	.ASCIZ	/S5%AHARD CHANGES=%D5%A%S3%AGLITCHES=%D5/

:EVENT DESCRIPTION MESSAGES

015101	124	040522	051516	EDTXQ:	.ASCIZ	/TRANSMIT MSG QUEUED/
015125	124	040522	051516	EDTxC:	.ASCIZ	/TRANSMIT MSG COMPLETED/
015154	042522	042503	053111	EDRXQ:	.ASCIZ	/RECEIVE SPACE QUEUED/
015201	122	041505	044505	EDRXC:	.ASCIZ	/RECEIVE MSG COMPLETED/
015227	104	053105	041511	EDDER:	.ASCIZ	/DEVICE ERROR/
015244	040504	040524	041440	EDDCK:	.ASCIZ	/DATA COMPARISON STARTED/
015274	042504	044526	042503	EDDVJ:	.ASCIZ	/DEVICE INIT AND SETUP/



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GLOBAL FORMAT STATEMENTS, MESSAGES, AND ASCII INFO

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

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GLOBAL FORMAT STATEMENTS, MESSAGES, AND ASCII INFO

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	020040		.ASCIZ	<15><12>/ RDSR RXCSR/
017245	122	041505	044505	DVEM4:	.ASCII	/RECEIVER OVERRUN/
017265	015	020012	020040		.ASCIZ	<15><12>/ RDSR RXCSR/
017311	124	046511	042105	DVEM5:	.ASCII	/TIMED OUT IN START,STACK,ACK SEQ/
017351	015	020012	020040		.ASCIZ	<15><12>/ RDATA SDATA/
017375	115	042117	046505	DVEM6:	.ASCII	/MODEM DID NOT RETURN MODEM READY/
017435	015	020012	020040		.ASCIZ	<15><12>/ RXCSR TXCSR/

.EVEN

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GLOBAL ERROR REPORT SECTION

.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.
:--

```

.LIST BEX

```

3019
3020 017462          BGNMSG  ERR1
3021 017462
3022 017462          PRINTB  #EVTF5A,OFSET,<B,GOOD>,<B,BAD> ;INDIVIDUAL DATA COMPARE ERROR
3023 017462 005046          CLR      -(SP)
3024 017464 153716 006555          BISB    BAD,(SP)
3025 017470 005046          CLR      -(SP)
3026 017472 153716 006554          BISB    GOOD,(SP)
3027 017476 013746 006532          MOV     OFFSET, -(SP)
3028 017502 012746 016274          MOV     #EVTF5A, -(SP)
3029 017506 012746 000004          MOV     #4, -(SP)
3030 017512 010600          MOV     SP,R0
3031 017514 104414          TRAP   C$PNTB
3032 017516 062706 000012          ADD     #12,SP
3033 017522          ENDMSG
3034 017522
3035 017522 104423          L10001: TRAP   C$MSG
3036
3037 017524          BGNMSG  ERR2
3038 017524
3039 017524          PRINTB  #EFM2,TEMP4 ;TOTAL DATA COMPARE FAILS ERROR
3040 017524 013746 006544          MOV     TEMP4, -(SP)
3041 017530 012746 014604          MOV     #EFM2, -(SP)
3042 017534 012746 000002          MOV     #2, -(SP)
3043 017540 010600          MOV     SP,R0
3044 017542 104414          TRAP   C$PNTB
3045 017544 062706 000006          ADD     #6,SP
3046 017550          ENDMSG
3047 017550
3048 017550 104423          L10002: TRAP   C$MSG
3049
3050 017552          BGNMSG  ERR10
3051 017552
3052 017552          PRINTB  #EFM11,R4,TEMP3 ;LENGH COMPARISON ERROR
3053 017552 013746 006542          MOV     TEMP3, -(SP)
3054 017556 010446          MOV     R4, -(SP)
3055 017560 012746 014701          MOV     #EFM11, -(SP)
3056 017564 012746 000003          MOV     #3, -(SP)
3057 017570 010600          MOV     SP,R0
3058 017572 104414          TRAP   C$PNTB
3059 017574 062706 000010          ADD     #10,SP
3060 017600          ENDMSG
3061 017600
3062 017600 104423          L10003: TRAP   C$MSG

```

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GLOBAL ERROR REPORT SECTION

```

3063
3064 017602          BGNMSG  ERR4
3065 017602
3066 017602          PRINTB  #EFM13,MHRCNT,MGLCNT          ERR4::
;MODEM STATUS CHANGE
3067 017602 013746 011520          MOV      MGLCNT,-(SP)
3068 017606 013746 011522          MOV      MHRCNT,-(SP)
3069 017612 012746 015030          MOV      #EFM13,-(SP)
3070 017616 012746 000003          MOV      #3,-(SP)
3071 017622 010600          MOV      SP,R0
3072 017624 104414          TRAP    C$PNTB
3073 017626 062706 000010          ADD     #10,SP
3074 017632          ENDMSG
3075 017632
3076 017632 104423          L10004: TRAP    C$MSG
3077
3078
3079
3080
3081          ;PRINT THE 2 OCTAL #'S IN TEMP3/4
3082          ;
3083
3084 017634          BGNMSG  ERR13
3085 017634
3086 017634          PRINTB  #EVTF3C,TEMP3,TEMP4          ERR13::
3087 017634 013746 006544          MOV      TEMP4,-(SP)
3088 017640 013746 006542          MOV      TEMP3,-(SP)
3089 017644 012746 015756          MOV      #EVTF3C,-(SP)
3090 017650 012746 000003          MOV      #3,-(SP)
3091 017654 010600          MOV      SP,R0
3092 017656 104414          TRAP    C$PNTB
3093 017660 062706 000010          ADD     #10,SP
3094 017664          ENDMSG
3095 017664
3096 017664 104423          L10005: TRAP    C$MSG
3097
3098
3099          ;PRINT THE 2 OCTAL #'S IN TEMP3/4
3100          ; AND THE MMSG. WHOSE ADDR. IS IN CONOTM
3101          ;
3102
3103 017666          BGNMSG  ERR14
3104 017666
3105 017666          PRINTB  #EVTF3D,TEMP3,TEMP4,CONOTM          ERR14::
3106 017666 013746 006550          MOV      CONOTM,-(SP)
3107 017672 013746 006544          MOV      TEMP4,-(SP)
3108 017676 013746 006542          MOV      TEMP3,-(SP)
3109 017702 012746 015773          MOV      #EVTF3D,-(SP)
3110 017706 012746 000004          MOV      #4,-(SP)
3111 017712 010600          MOV      SP,R0
3112 017714 104414          TRAP    C$PNTB
3113 017716 062706 000012          ADD     #12,SP
3114 017722          ENDMSG
3115 017722
3116 017722 104423          L10006: TRAP    C$MSG
3117
3118 017724          EXIT  MSG

```

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3119 017724 000167  
3120 017726 177772  
3121  
3122

.WORD JSJMP  
.WORD L1000S-2-

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GLOBAL SUBROUTINES SECTION

```

3123 .SBTTL GLOBAL SUBROUTINES SECTION
3124
3125 :++
3126 : THE GLOBAL SUBROUTINES SECTION CONTAINS THE SUBROUTINES
3127 : THAT ARE USED IN MORE THAN ONE TEST.
3128 :--
3129
3130
3131 .SBTTL          CLOCK SETUP SUBROUTINE
3132
3133 :++
3134 : FUNCTIONAL DESCRIPTION:
3135 : THIS SUBROUTINE SETS UP THE CLOCK INFORMATION TABLE FOLLOWING A "CLOCK"
3136 : CALL EXECUTED IN THE INITIALIZATION CODE. BUT SINCE THE "CLOCK" CALL
3137 : SAYS NOTHING ABOUT AN LSI-11'S CLOCK, THIS ROUTINE IS ONLY USED IF A
3138 : LINE OR P-CLOCK IS FOUND.
3139
3140 : INPUTS:
3141 : R1= POINTS TO SUPERVISOR SPACE WHERE CLOCK INFO WAS RETURNED
3142 : R2= POINTS TO "CLK" TABLE WHERE CLOCK INFO WILL BE KEPT
3143
3144 : IMPLICIT INPUTS:
3145 : THE SUPERVISOR SPACE WHERE CLOCK INFO WAS RETURNED BY THE "CLOCK" CALL
3146
3147 : OUTPUTS:
3148 : "CLKCSR" GETS LOADED WITH THE CLOCK'S CSR ADDRESS
3149 : "CLKBR" GETS LOADED WITH THE CLOCK'S INTERRUPT LEVEL
3150 : "CLKVEC" GETS LOADED WITH THE CLOCK'S INTERRUPT VECTOR
3151 : "CLKHZ" GETS LOADED WITH THE LINE FREQ. (HERTZ RATE) WHICH DETERMINES
3152 : THE NUMBER OF TICKS IN A SECOND
3153
3154 : CALLING SEQUENCE:
3155 : JSR      PC,CLKSET          ;CALL CLOCK SETUP WITH R1 & R2 SETUP
3156 :--
3157
3158 CLKSET:
3159 017730 012122  MOV      (R1)+,(R2)+      ;LOAD CLOCK'S CSR ADDR. INTO "CLKCSR"
3160 017732 012112  MOV      (R1)+,(R2)       ;LOAD CLOCK'S INT. LEVEL INTO "CLKBR"
3161 017734 006312  ASL      (R2)             ;ADJUST THE INT. LEVEL FOR LOADING INTO
3162 017736 006312  ASL      (R2)             ; THE PSW WITH A "SETVEC" CALL
3163 017740 006312  ASL      (R2)
3164 017742 006312  ASL      (R2)
3165 017744 006322  AS      (R2)+
3166 017746 012122  MOV      (R1)+,(R2)+      ;LOAD CLOCK'S INT. VECTOR INTO "CLKVEC"
3167 017750 012122  MOV      (R1)+,(R2)+      ;LOAD CLOCK'S HERTZ RATE INTO "CLKHZ"
3168 017752 000207  RTS      PC
3169

```

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CLOCK SETUP SUBROUTINE

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3200
3201
3202 017754
3203 017754
3204
3205 017754 005077 166640
3206 017760 005337 006636
3207 017764 001015
3208 017766 013737 006626 006636
3209 017774 005237 006634
3210 020000 022737 000074 006634
3211 020006 001004
3212 020010 005237 006632
3213 020014 005037 006634
3214
3215 020020 005737 006640 1$:
3216 020024 001402
3217 020026 005337 006640
3218 020032 005737 006642 2$:
3219 020036 001402
3220 020040 005337 006642
3221 020044 005737 006644 3$:
3222 020050 001406
3223 020052 023737 006626 006636
3224 020060 001002
3225 020062 005337 006644

```

SBTTL CLOCK INTERRUPT SERVICE ROUTINE

++

FUNCTIONAL DESCRIPTION:  
THIS IS THE CLOCK INTERRUPT SERVICE ROUTINE WHICH TAKES CARE OF KEEPING THE "TIME-SINCE-START" AND COUNTING DOWN ANY OF THE "EVENT" TIMERS. THE TIMERS ARE USED TO TIME COMPLETION OF DEVICE REQUESTS. THE "TIME-SINCE-START" IS USED TO BE LOGGED WITH EACH ENTRY INTO THE EVENT LOG.

IMPLICIT INPUTS:  
TIMTCK: THE CURRENT NO. OF TICKS LEFT TO BE COUNTED UNTIL A SECOND HAS BEEN COUNTED OFF  
CLKHZ: THE NO. OF TICKS IN A SECOND, DETERMINED BY THE SYS. LINE FREQ.  
TIMMIN & TIMSEC: CURRENT VALUE OF "TIME-SINCE-START" IN MINUTES & SECONDS  
TIMER 1,2, & S: CURRENT VALUES OF THE "EVENT TIMERS"

IMPLICIT OUTPUTS:  
NEW VALUE OF EVENT TIMER "1" DECREMENTED BY 1 TICK IF IT WAS NON-ZERO  
NEW VALUE OF EVENT TIMER "2" DECREMENTED BY 1 TICK IF IT WAS NON-ZERO  
NEW VALUE OF EVENT TIMER "S" DECREMENTED BY 1 SECOND IF IT WAS NON-ZERO

FUNCTIONAL SIDE EFFECTS:  
THE CLOCK IS DISABLED UPON ENTRY AND REENABLED WHEN LEAVING

CALLING SEQUENCE:  
THIS ROUTINE IS CALLED WHEN THE CLOCK INTERRUPTS THRU "CLKVEC". THE ADDRESS OF THIS ROUTINE WAS LOADED INTO THE CLOCK'S INTERRUPT VECTOR WITH A SUPERVISOR "SETVEC" CALL.

---

```

BGNSRV CLKINT
                                CLKINT::
CLR @CLKCSR ;DISABLE THE CLOCK FROM INTERRUPTING
DEC TIMTCK ;DECREMENT THE # OF TICKS/SEC.
BNE 1$ ;GO CHECK TIMERS (1&2-TICKS, 3-SECONDS)
MOV CLKHZ,TIMTCK ;RESET THE # OF TICKS/SEC.
INC TIMSEC ;INC # OF SECS-SINCE-START
CMP #60.,TIMSEC ;SEE IF WE'VE COUNTED 60 SECS. YET
BNE 1$ ;IF NOT, GO CHECK TIMERS
INC TIMMIN ; ELSE INC MINUTES-SINCE-START
CLR TIMSEC ; AND RESTART SECOND COUNTER

1$: TST TIMER1 ;SEE IF TIMER #1, TIMING ANYTHING
BEQ 2$ ; IF=0, NOTHING BEING TIMED CHECK NEXT TIMER
DEC TIMER1 ; ELSE DECREMENT THE TIMER VALUE (BY 1 TICK)

2$: TST TIMER2 ;SEE IF TIMER #2, TIMING ANYTHING
BEQ 3$ ; IF=0, NOTHING BEING TIMED CHECK NEXT TIMER
DEC TIMER2 ; ELSE DECREMENT THE TIMER VALUE (BY 1 TICK)

3$: TST TIMERS ;SEE IF TIMER #3, TIMING ANYTHING
BEQ 4$ ; IF=0, NOTHING BEING TIMED, LEAVE
CMP CLKHZ,TIMTCK ;SEE IF A SECOND HAS BEEN COUNTED OFF
BNE 4$ ; BR IF NO
DEC TIMERS ; ELSE DECREMENT THE TIMER VALUE (BY 1 SEC.)

```

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CLOCK INTERRUPT SERVICE ROUTINE

3226	020066	013777	006630	166524	4\$:	MOV	CLKEN,@CLKCSR	;REENABLE THE CLOCK TO INTERRUPT
3227	020074					ENDSRV		
3228	020074							L10007:
3229	020074	000002						RTI

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EVENT LOG SUBROUTINES

.SBTTL EVENT LOG SUBROUTINES

```

++
: FUNCTIONAL DESCRIPTION:
: THIS SUBROUTINE HAS A DIFFERENT ENTRY POINT
: FOR EACH EVENT TO BE LOGGED AND ALWAYS PRINTS
: THE SHORT 'OPERATOR AWAKE' MESSAGE TO CONSOLE THEN LOGS THE
: EVENT TYPE, TIME, AND THE OTHER 3 WORDS OF INFO PASSED TO THE
: SUBROUTINE AT CALLING TIME
:
: INPUTS:
: TIMMIN & TIMSEC: CURRENT VALUE OF 'TIME-SINCE-START'
: TEMP2: WORD #1 OF EVENT LOG INFORMATION (FOR MOST EVENT TYPES)
: TEMP3: WORD #2 OF EVENT LOG INFORMATION
: TEMP4: WORD #3 OF EVENT LOG INFORMATION
: MODS: CURRENT VALUE OF THE MODEM SIGNALS AVAILABLE FROM THE DEVICE
:
: OUTPUTS:
: 'OPERATOR AWAKE' MESSAGE SENT TO THE CONSOLE
: NEW EVENT LOGGED IN 'EVTLOG' (EVENT LOG)
: UPDATED 'EVTPTN' (EVENT LOG ENTRY POINTER)
:
: SUBORDINATE ROUTINES USED:
: 'DVMODS' THE DEVICE SUBROUTINE THAT RETURNS MODEM STATUS IN 'MODS'
: (FOR SOME EVENT TYPES)

```

```

: FUNCTIONAL SIDE EFFECTS:
: TEMP: USED TO STORE ADDRESS OF 'OPERATOR AWAKE' MESSAGE
: TEMP1: USED TO SETUP THE VALUE OF THE 'EVENT TYPE' BYTE FOR LOGGING

```

```

: CALLING SEQUENCE:
: JSR PC,LOGTXQ ;CALL THE LOG EVENT SUBROUTINE WITH TEMP,TEMP1,
: ; TEMP2, TEMP3, AND TEMP4 SETUP
: " " "
: JSR PC,LOGCMP
:

```

```

LOGTXQ:
: MOV #STXQ,TEMP1 ;SET UP MSG. TO PRINT
: MOV #TXQ,TEMP ;SET UP EVENT TYPE
: BR LOGS1 ;GO LOG EVENT AND TIME

```

```

LOGTXC:
: MOV #STXC,TEMP1 ;SET UP MSG. TO PRINT
: MOV #TXC,TEMP ;SET UP EVENT TYPE
: BR LOGS1 ;GO LOG EVENT AND TIME

```

```

LOGRXQ:
: MOV #SRXQ,TEMP1 ;SET UP MSG. TO PRINT
: MOV #RXQ,TEMP ;SET UP EVENT TYPE
: BR LOGS1 ;GO LOG EVENT AND TIME

```

```

LOGRXC:
: MOV #RXC,TEMP ;SET UP EVENT TYPE
: BR LOGS1 ;GO LOG EVENT AND TIME

```

```

LGDVE:

```

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3260
3261
3262
3263
3264
3265
3266
3267 020076
3268 020076 012737 016537 006536
3269 020104 012737 000000 006534
3270 0201'2 000517
3271
3272 020114
3273 020114 012737 016550 006536
3274 020122 012737 000002 006534
3275 020130 000510
3276
3277 020132
3278 020132 012737 016561 006536
3279 020140 012737 000004 006534
3280 020146 000501
3281
3282 020150
3283 020150 012737 000006 006534
3284 020156 000475
3285 020160

```

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EVENT LOG SUBROUTINES

3286	020160	012737	016572	006536	MOV	#SDVE,TEMP1	:SET UP MSG. TO PRINT
3287	020166	012737	000010	006534	MOV	#DER,TEMP	:SET UP EVENT TYPE
3288	020174	000503			BR	LOGS3	:GO LOG EVENT AND TIME
3289							
3290	020176				LOGDVI:		
3291	020176	012737	016614	006536	MOV	#SDVI,TEMP1	:SET UP MSG. TO PRINT
3292	020204	012737	000012	006534	MOV	#DVI,TEMP	:SET UP EVENT TYPE
3293	020212	113737	006566	006540	MOVB	MODTYP,TEMP2	
3294	020220	113737	006570	006541	MOVB	MLTYP,TEMP2+1	
3295	020226	013737	006576	006542	MOV	RPASS,TEMP3	
3296	020234	013737	006574	006544	MOV	PARAM,TEMP4	:SET UP EVNT ENTRIES
3297	020242	000460			BR	LOGS3	:GO LOG EVENT AND TIME
3298							
3299	020244				LOGCMP:		
3300	020244	012737	016603	006536	MOV	#SCM,TEMP1	:SET UP MSG. TO PRINT
3301	020252	012737	000014	006534	MOV	#DCK,TEMP	:SET UP EVENT TYPE
3302	020260	000451			BR	LOGS3	
3303	020262				LOGCML:		
3304	020262	012737	016625	006536	MOV	#SCML,TEMP1	
3305	020270	012737	000020	006534	MOV	#DLE,TEMP	:SET UP MSG. AND TYPE
3306	020276	000442			BR	LOGS3	:GO LOG EVENT AND TIME
3307	020300				LOGCMD:		
3308	020300	012737	016636	006536	MOV	#SCMD,TEMP1	
3309	020306	012737	000022	006534	MOV	#DDE,TEMP	
3310	020314	000433			BR	LOGS3	:GO LOG MSG TYPE AND TIME
3311	020316				LOGEOP:		
3312	020316	012737	016647	006536	MOV	#SEOP,TEMP1	
3313	020324	012737	000024	006534	MOV	#EOP,TEMP	
3314	020332	000424			BR	LOGS3	:GO LOG MSG TYPE AND TIME
3315							
3316							
3317	020334				LOGMSC:		
3318	020334	012737	016660	006536	MOV	#SMSC,TEMP1	
3319	020342	012737	000016	006534	MOV	#MSC,TEMP	
3320	020350	000415			BR	LOGS3	
3321							
3322							
3323	020352	013746	006506		LOGS1:	MOV	ERRCNT, -(SP)
3324	020356	004737	035124			JSR	PC, DVMODS
3325	020362	012604				MOV	(SP)+, R4
3326	020364	020437	006506			CMIP	R4,ERRCNT
3327	020370	001402				BEQ	1\$
3328	020372	000137	020606			JMP	LOGEX
3329							
3330	020376	013737	007554	006544	1\$:	MOV	MODS,TEMP4
3331							
3332	020404				LOGS3:		
3333	020404	022737	000006	006534		CMP	#RXC,TEMP
3334	020412	001434				BEQ	LOGS5
3335	020414	032737	000001	006574		BIT	#STATB,PARAM
3336	020422	001430				BEQ	LOGS5
3337							:IF NO STATUS SELECTED
3338							:GO TO 5
3339	020424	022737	000010	006500		CMP	#10, LNCNT
3340	020432	001012				BNE	LOGS4
3341	020434	005037	006500			CLR	LNCNT

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EVENT LOG SUBROUTINES

```

3342
3343 020440          PRINTF #CR          ;ELSE PRINT CR
3344 020440 012746 016534
3345 020444 012746 000001          MOV #CR,-(SP)
3346 020450 010600          MOV #1,-(SP)
3347 020452 104417          MOV SP,R0
3348 020454 062706 000004          TRAP C$PNTF
3349 020460          LOGS4:          ADD #4,SP
3350 020460 005237 006500          INC LNCNT          ;INC COUNTER OF # OF AWAKE MSGS
3351 020464          PRINTF TEMP1          ;PRINT OPERATOR AWAKE MSG.
3352 020464 013746 006536          MOV TEMP1,-(SP)
3353 020470 012746 000001          MOV #1,-(SP)
3354 020474 010600          MOV SP,R0
3355 020476 104417          TRAP C$PNTF
3356 020500 062706 000004          ADD #4,SP
3357 020504 010346          LOGS5: MOV R3,-(SP)          ;SAVE R3 ON THE STACK
3358 020506 013703 006646          MOV EVTPTR,R3
3359 020512 113723 006534          MOVB TEMP,(R3)+          ;LOG EVENT
3360 020516 013737 006626          MOV CLKHZ,TEMP
3361 020524 163737 006636          SUB TIMTCK,TEMP
3362 020532 113723 006534          MOVB TEMP,(R3)+          ;LOG TIME SINCE START
3363 020536 113723 006634          MOVB TIMSEC,(R3)+
3364 020542 113723 006632          MOVB TIMMIN,(R3)+          ;TICKS,SECS AND MINS.
3365 020546 013723 006540          MOV TEMP2,(R3)+          ;LOG EVNT ENTRY 3
3366 020552 013723 006542          MOV TEMP3,(R3)+          ;LOG EVNT ENTRY 4
3367 020556 013723 006544          MOV TEMP4,(R3)+          ;LOG EVNT ENTRY 5
3368 020562 020327 007552          CMP R3,#EVTEND
3369 020566 103404          BLO LOGS2
3370          ;IF EVENT LOG FULL GO
3371 020570 012713 177777          MOV #-1,(R3)          ;CONTINUE;ELSE GO TO 2
3372 020574 012703 006650          MOV #EVTLOG,R3          ;LOG A TABLE END
3373 020600 010337 006646          LOGS2: MOV R3,EVTPTR          ;PUT R3 TO START OF TABLE
3374 020604 012603          MOV (SP)+,R3          ;RESTORE POINTER
3375 020606 000207          LOGEX: RTS PC          ;RESTORE R3
3376

```

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REPORT EVENT LOG

```

3377 .SBTTL REPORT EVENT LOG
3378      ;;DPV DCLT PROGRAM
3379      ;;RPT> LOG
3380      ;;      HELP
3381      ;;      EXIT
3382      ;;      COUNTER/FULL,ERROR,OFFSET=NN(0)
3383
3384 REPORT: MOV      R2,-(SP)          ;SAVE R2,R3,R4 ON THE STACK
3385          MOV      R3,-(SP)
3386          MOV      R4,-(SP)
3387
3388          ;PRINT HELP MESSAGE
3389          PRINTF   #RHLPO          ;BASIC HELP MESSAGE
3390
3391          MOV      #RHLPO,-(SP)
3392          MOV      #1,-(SP)
3393          MOV      SP,R0
3394          TRAP    C$PNTF
3395          ADD      #4,SP
3396
3396 GETRCL: CLRB     P$GDBD          ;INIT GOOD/BAD FLAG -1=BAD INPUT
3397          CLRB     P$NNUF          ;INIT MORE COMMAND LINE INPUT NEEDED
3398
3399          ;PRINT PROMPT 'RPT>'
3400          GMANID   CLISRP,CMDBUF,A,-1,1,72.,NO
3401
3402          TRAP     C$GMAN
3403          BR      10000$
3404          .WORD   CMDBUF
3405          .WORD   T$CODE
3406          .WORD   CLISRP
3407          .WORD   -1
3408          .WORD   T$LOLIM
3409          .WORD   T$HILIM
3410
3410          10000$:
3410          MOV      #CMDBUF,P$BUFA  ;INPUT BUFFER
3411          MOV      #CLIRT,P$TREE   ;REPORT CLI TREE
3412          MOV      #CLIRAC,P$ACT   ;ACTION ROUTINES
3413          CLR      QUALFG
3414          JSR     PC,P$TRV         ;GO PARSE COMMAND LINE
3415          TSTB    P$GDBD          ;COMMAND OK ?
3416          BEQ     1$              ;YES,BRANCH
3417          PRINTF   #LLIERM        ;PRINT INVALID INPUT MESSAGE
3418
3418          MOV      #CLIERM,-(SP)
3419          MOV      #1,-(SP)
3420          MOV      SP,R0
3421          TRAP    C$PNTF
3422          ADD      #4,SP
3423
3423          JMP      GETRCL          ;TRY AGAIN
3424
3425          1$:
3425          TSTB    P$NNUF          ;MORE COMMAND NEEDED ?
3426          BEQ     10$             ;NO,BRANCH
3427          PRINTF   #CLINUF        ;INCOMPLETE MESSAGE
3428
3428          MOV      #CLINUF,-(SP)
3429          MOV      #1,-(SP)
3430          MOV      SP,R0
3431          TRAP    C$PNTF
3432          ADD      #4,SP

```

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REPORT EVENT LOG

3433	021000	000137	020636		JMP	GETRCL		;TRY AGAIN
3434								
3435	021004	023727	003010	000002	10\$:	CMP	KEYWD1,#RPEXT	;EXIT COMMAND ?
3436	021012	001402				BEQ	20\$	;YES,BRANCH
3437	021014	000137	020636			JMP	GETRCL	;GET ANOTHER COMMAND
3438	021020	012604			20\$:	MOV	(SP)+,R4	;RESTORE R4
3439	021022	012603				MOV	(SP)+,R3	;RESTORE R3
3440	021024	012602				MOV	(SP)+,R2	;RESTORE R2
3441	021026	000207				RTS	PC	;RETURN

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COMMAND LINE PARSING TREE FOR REPORT

```

3442 .SBTTL COMMAND LINE PARSING TREE FOR REPORT
3443 CLIRT: CLI CLISPA,0,R10$ ;SKIP SPACES IN COMMAND LINE
3444 021034 R10$: CLI '<?>',RPHLP,R11$ ;IF INPUT = ? THEN PRINT HELP MESSAGE
3445 021040 CLI CLIEXI,0 ;AND EXIT PARSER
3446 021042 R11$: CLI CLISTR,RPHLP,R12$,<'HELP'> ;IF INPUT = 'HELP' THEN PRINT HELP
3447 021056 CLI CLIEXI,0 ;MESSAGE AND EXIT PARSER
3448 021060 R12$: CLI CLISTR,RPEXT,R13$,<'EXIT'> ;IF INPUT = 'EXIT' THEN SET KEYWORD =
3449 021074 CLI CLIEXI,0 ;RPEXT AND EXIT PARSER
3450 021076 R13$: CLI CLISTR,RPLOG,R14$,<'LOG'> ;IF INPUT = 'LOG' THEN GO PRINT EVENT
3451 021110 CLI CLIEXI,0 ;LOG AND EXIT PARSER
3452 021112 R14$: CLI CLISTR,RNOTNF,R30$,<'COUNTERS'>;IF INPUT = COUNTERS
3453 021132 CLI CLIBR,0,R20$ ;THEN GET SWITCH
3454 021136 R20$: CLI '<'/>',RNOTNF,R30$ ;
3455 021142 CLI CLISTR,RPERR,R21$,<'ERROR'> ;: REPORT ERROR COUNTERS
3456 021156 CLI CLIEXI,0 ;
3457 021160 R21$: CLI CLISTR,RPFUL,R22$,<'FULL'> ;:REPORT ALL STATUS
3458 021174 CLI CLIEXI,0 ;
3459 021176 R22$: CLI CLISTR,RNOTNF,R30$,<'OFFSET'>;: REPORT ONE LOCATION
3460 021214 CLI '<'=>',0,R30$ ;
3461 021220 CLI CLIOCT,RPSWO,R30$ ;:
3462 021224 CLI CLIEXI,0 ;
3463 021226 R30$: CLI CLIERR,0 ;
3464 021230 R125$: CLI CLIEXI,0 ;

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CLI ACTION DISPATCHER AND ROUTINES

```

3465 .SBTTL CLI ACTION DISPATCHER AND ROUTINES
3466 021232 006302 CLIRAC: ASL R2 ;SET UP INDEX
3467 021234 016202 021250 MOV 10$(R2),R2 ;
3468 021240 062702 021250 ADD #10$,R2 ;
3469 021244 004712 JSR PC,(R2) ;GO DO ACTION
3470 021246 000207 RTS PC ;RETURN
3471 021250 000026 10$: .WORD ACTRNL-10$ ;NULL
3472 021252 000030 .WORD ACTRHL-10$ ;HELP ROUTINE
3473 021254 000074 .WORD ACTREX-10$ ;EXIT ROUTINE
3474 021256 000104 .WORD ACTRLG-10$ ;REPORT EVENT LOG ROUTINE
3475 021260 000142 .WORD ACTERR-10$ ;ERROR COUNTERS ONLY
3476 021262 000120 .WORD ACTFUL-10$ ;ALL COUNTERS
3477 021264 000020 .WORD ACTRNF-10$ ;MORE COMMAND NEEDED
3478 021266 000164 .WORD ACTRSO-10$ ;VALIDATE OFFSET
3479
3480 :::::ACTION ROUTINES FOR REPORT:>:::::
3481 021270 113737 177777 003146 ACTRNF: MOVB -1,P$NNUF ;SET 'MORE COMMAND' NEEDED
3482 021276 000207 ACTRNL: RTS PC ;NULL
3483
3484 .:PRINT HELP MESSAGE
3485 021300 012702 003036 ACTRHL: MOV #RHLPTB,R2 ;INDEX FOR HELP MESSAGES
3486 021304 1$: PRINTF #HLPF,(R2)+ ;PRINT IT
3487 021304 012246 MOV (R2)+,-(SP)
3488 021306 012746 012273 MOV #HLPF,-(SP)
3489 021312 012746 000002 MOV #2,-(SP)
3490 021316 010600 MOV SP,R0
3491 021320 104417 TRAP C$PNTF
3492 021322 062706 000006 ADD #6,SP
3493 021326 020227 003052 CMP R2,#RHLPEN ;LAST MESSAGE ?
3494 021332 001364 BNE 1$ ;NO BRANCH
3495 021334 012737 000001 003010 MOV #RPHLP,KEYWD1 ;SET KEYWORD
3496 021342 000207 RTS PC ;RETURN
3497
3498 .:EXIT REPORT LEVEL
3499 021344 012737 000002 003010 ACTREX: MOV #RPEXT,KEYWD1 ;SET KEYWORD AND RETURN
3500 021352 000207 RTS PC
3501
3502 .:PRINT ERROR LOG
3503 021354 004737 022056 003010 ACTRLG: JSR PC,REPLOG ;GO PRINT EVENT LOG
3504 021360 012737 000003 MOV #RPLOG,KEYWD1 ;SET KEYWORD
3505 021366 000207 RTS PC ;RETURN
3506
3507 .:REPORT ALL MESSAGE AND ERROR COUNTERS
3508 021370 012737 000000 037250 ACTFUL: MOV #0,FIR ;STARTING INDEX
3509 021376 012737 000036 037246 MOV #36,LAST ;LAST INDEX
3510 021404 004737 021540 JSR PC,STAPRI ;GO PRINT IT
3511 021410 000207 RETURN
3512
3513 .:PRINT ONLY DDCMP ERROR COUNTERS
3514 021412 012737 000014 037250 ACTERR: MOV #14,FIR ;FIRST ERROR
3515 021420 012737 009036 037246 MOV #36,LAST ;LAST ERROR
3516 021426 004737 021540 JSR PC,STAPRI ;GO PRINT IT
3517 021432 000207 RETURN
3518
3519
3520 .:VERIFY OFFSET VALUE

```

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```

3521 021434 105037 003146 ACTRSO: CLRB P$NNUF ;CLEAR 'NOT ENOUGH FLAG'
3522 021440 032737 000001 003142 BIT #BIT0,P$NUM ;IS IT ODD ?
3523 021446 001020 BNE 20$ ;YES,BRANCH
3524 021450 005737 003142 TST P$NUM ;NEGATIVE # ?
3525 021454 100415 BMI 20$ ;YES,BRANCH
3526 021456 023727 003142 000036 CMP P$NUM,#36 ;INDEX LARGER THEN 36 ?
3527 021464 003011 BGT 20$ ;YES,BRANCH
3528 021466 013737 003142 037250 MOV P$NUM,FIR ;STARTING INDEX
3529 021474 013737 003142 037246 MOV P$NUM,LAST ;LAST LOCATION
3530 021502 004737 021540 JSR PC,STAPRI ;PRINT SINGLE LOCATION
3531 021506 000413 BR 30$ ;EXIT
3532 021510 20$: PRINTS #RPTIV ;INVALID
3533 021510 012746 013376 MOV #RPTIV,-(SP)
3534 021514 012746 000001 MOV #1,-(SP)
3535 021520 010600 MOV SP,R0
3536 021522 104416 TRAP C$PNTS
3537 021524 062706 000004 ADD #4,SP
3538 021530 112737 177777 003147 30$: MOVB #-1,P$GDBD ;SET BAD DATA FLAG
3539 021536 000207 RETURN ;OFFSET OK - EXIT
3540
3541
3542 ;; PRINT ROUTINES
3543 021540 010146 STAPRI: MOV R1,-(SP) ;SAVE R1
3544 021542 032737 000040 006574 BIT #PROTOB,PARAM ;'/PROTOCOL' SELECTED?
3545 021550 001011 BNE 5$ ;YES,BRANCH
3546 021552 PRINTF #RPTNV ;'VALID ONLY WITH PROTOCOL SELECTED'
3547 021552 012746 013421 MOV #RPTIV,-(SP)
3548 021556 012746 000001 MOV #1,-(SP)
3549 021562 010600 MOV SP,R0
3550 021564 104417 TRAP C$PNTF
3551 021566 062706 000004 ADD #4,SP
3552 021572 000420 BR 20$ ;EXIT
3553 021574 013701 037250 5$: MOV FIR,R1 ;FIRST INDEX
3554 021600 016137 037146 037252 10$: MOV STALST(R1),MES ;MESSAGE ADDRESS
3555 021606 016137 037046 037254 MOV PRSTAT(R1),MESDATA ;MESSAGE DATA
3556 021614 004771 037206 JSR PC,@STAINDR1 ;JUMP TO PROPER PRINT ROUTINE
3557 021620 062701 000002 ADD #2,R1 ;BUMP INDEX
3558 021624 020137 037246 CMP R1,LAST ;ALL MESSAGES PRINTED
3559 021630 003001 BGT 20$ ;YES,BRANCH
3560 021632 000762 BR 10$ ;PRINT NEXT MESSAGE
3561 021634 012601 20$: MOV (SP)+,R1 ;RESTORE R1
3562 021636 000207 RETURN ;EXIT
3563
3564
3565 ;; PRINT WORD LOCATION
3566 021640 PRIW: PRINTS MES,MESDATA ;PRINT WORD LOCATION
3567 021640 013746 037254 MOV MESDATA,-(SP)
3568 021644 013746 037252 MOV MES,-(SP)
3569 021650 012746 000002 MOV #2,-(SP)
3570 021654 010600 MOV SP,R0
3571 021656 104416 TRAP C$PNTS
3572 021660 062706 000006 ADD #6,SP
3573 021664 000207 RETURN
3574
3575
3576 ;; PRINT TWO BYTES OF DATA

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```

3577 021666          005046          037255          PRINTS  MES,<B,MESDATA>,<B,MESDATA+1>
3578 021666 005046
3579 021670 153716 037255
3580 021674 005046
3581 021676 153716 037254
3582 021702 013746 037252
3583 021706 012746 000003
3584 021712 010600
3585 021714 104416
3586 021716 062706 000010
3587 021722 000207          RETURN
3588
3589          ;; PRINT SPECIAL BYTE MASK
3590 021724 005037 006536          PRIBS:  CLR  TEMP1
3591 021730 005037 006540          CLR  TEMP2
3592 021734 005037 006542          CLR  TEMP3
3593 021740 132737 000001 037255          BITB  #BIT0,MESDATA+1 ;BIT 0 = 1 ?
3594 021746 001402          BEQ  10$ ;NO,BRANCH
3595 021750 005237 006536          INC  TEMP1 ;SET IT
3596 021754 132737 000002 037255 10$: BITB  #BIT1,MESDATA+1 ;BIT 1 = 1 ?
3597 021762 001402          BEQ  20$ ;NO,BRANCH
3598 021764 005237 006540          INC  TEMP2 ;SET IT
3599 021770 132737 000004 037255 20$: BITB  #BIT2,MESDATA+1 ;BIT 2 = 1 ?
3600 021776 001402          BEQ  30$ ;NO,BRANCH
3601 022000 005237 006542          INC  TEMP3 ;SET IT
3602 022004          30$: PRINTS  MES,<B,MESDATA>,<B,TEMP1>,<B,TEMP2>,<B,TEMP3>
3603 022004 005046
3604 022006 153716 006542
3605 022012 005046
3606 022014 153716 006540
3607 022020 005046
3608 022022 153716 006536
3609 022026 005046
3610 022030 153716 037254
3611 022034 013746 037252
3612 022040 012746 000005
3613 022044 010600
3614 022046 104416
3615 022050 062706 000014
3616 022054 000207          RETURN
3617
3618
3619

```

```

CLR  -(SP)
BISB MESDATA+1,(SP)
CLR  -(SP)
BISB MESDATA,(SP)
MOV  MES,-(SP)
MOV  #3,-(SP)
MOV  SP,RO
TRAP C$PNTS
ADD  #10,SP

```

```

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,RO
TRAP C$PNTS
ADD  #14,SP

```

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DUMP EVENT LOG

```

3620      .SBTTL      DUMP EVENT LOG
3621
3622
3623 022056 010246      REPLOG: MOV      R2,-(SP)      ;SAVE R2,R3,R4 ON THE STACK
3624 022060 010346      MOV      R3,-(SP)
3625 022062 010446      MOV      R4,-(SP)
3626
3627
3628
3629
3630 022064 013702 006646      MOV      EVTPTR,R2      ;MAKE R2 A POINTER TO EVENT TABLE
3631 022070 023727 006650 177777      CMP      EVTLOG,#-1      ;SEE IF EVENT TABLE IS EMPTY
3632 022076 001034      BNE      RPT0      ;BR IF NO
3633 022100      PRINTS  #NULEVT      ;IF EMPTY TELL OPERATOR.
3634 022100 012746 015507      MOV      #NULEVT,-(SP)
3635 022104 012746 000001      MOV      #1,-(SP)
3636 022110 010600      MOV      SP,R0
3637 022112 104416      TRAP    C$PNTS
3638 022114 062706 000004      ADD     #4,SP
3639 022120 000137 023004      JMP     ENDEVT      ;AND END
3640
3641 022124 162702 000012      RPT:   SUB     #12,R2      ;NOW POINT BACK TO TOP OF ENTRY U
3642      ;JUST PRINTED
3643
3644 022130 020227 006650      CMP     R2,#EVTLOG      ;POINTING TO TOP OF EVNT LOG QUEUE?
3645 022134 001010      BNE     RPT1      ; BR IF NO
3646 022136 012702 007552      MOV     #EVTEND,R2      ;SET R2 TO POINT TO BOTTOM OF LOG
3647 022142 026227 177776 177777      CMP     -2(R2),#-1
3648 022150 001007      BNE     RPT0      ;IF END OF LOG IS NOT EMPTY
3649 022152 000137 023004      JMP     ENDEVT      ;CONTINUE...ELSE EXIT
3650
3651 022156 020237 006646      RPT1:  CMP     R2,EVTPTR      ;ARE WE BACK TO POINTER?
3652 022162 001002      BNE     RPT0      ;IF NOT CONTINUE
3653 022164 000137 023004      JMP     ENDEVT      ;IF SO EXIT....
3654
3655 022170 162702 000012      RPT0:  SUB     #12,R2      ;POINT R2 TO START OF ENTRY
3656 022174      RPTAA: PRINTS  #EVTFO      ;PRINT EVENT ENTRY HEADER
3657 022174 012746 015547      MOV     #EVTFO,-(SP)
3658 022200 012746 000001      MOV     #1,-(SP)
3659 022204 010600      MOV     SP,R0
3660 022206 104416      TRAP    C$PNTS
3661 022210 062706 000004      ADD     #4,SP
3662 022214 112203      MOVB   (R2)+,R3      ;PUT EVENT TYPE INTO R3
3663 022216 112237 007646      MOVB   (R2)+,EVTICK      ;PUT EVENT TIME (TICKS,SECS,MINS IN TEMP LOC.S)
3664 022222 112237 007642      MOVB   (R2)+,EVTSEC
3665 022226 112237 007644      MOVB   (R2)+,EVTMIN
3666 022232      PRINTS #EVTFO,EVTMIN,EVTSEC,EVTICK,EVTLIST(R3) ;PRINT EVENT TIME AND DESCRIPT.
3667 022232 016346 007612      MOV     EVTLIST(R3),-(SP)
3668 022236 013746 007646      MOV     EVTTICK,-(SP)
3669 022242 013746 007642      MOV     EVTSEC,-(SP)
3670 022246 013746 007644      MOV     EVTMIN,-(SP)
3671 022252 012746 015643      MOV     #EVTFO,-(SP)
3672 022256 012746 000005      MOV     #5,-(SP)
3673 022262 010600      MOV     SP,R0
3674 022264 104416      TRAP    C$PNTS
3675 022266 062706 000014      ADD     #14,SP

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```

3676 022272 000173 007656          JMP      @RPTDSP(R3)      ;DISPATCH TO DECODING SECTION FOR SPECIFIC TYPE
3677
3678 022276 012237 007650          RPTTXQ: MOV      (R2)+,EVTADD ;STORE MESSAGE ADDRESS FOR PRINTING
3679 022302 012237 007652          MOV      (R2)+,EVTBCT   ;STORE BYTE COUNT FOR PRINTING
3680 022306 012203                    MOV      (R2)+,R3       ;STORE MODEM STATUS FOR PRINTING
3681 022310                    PRINTS   #EVTF2,EVTADD,EVTBCT ;PRINT ADDR,BYTE CNT
3682 022310 013746 007652                    MOV      EVTBCT,-(SP)
3683 022314 013746 007650                    MOV      EVTADD,-(SP)
3684 022320 012746 015672                    MOV      #EVTF2,-(SP)
3685 022324 012746 000003                    MOV      #3,-(SP)
3686 022330 010600                    MOV      SP,R0
3687 022332 104416                    TRAP    C$PNTS
3688 022334 062706 000010                    ADD     #10,SP
3689 022340 004737 023014          JSR     PC,RPTMSB      ;GO PRINT MODEM STATUS
3690 022344 000137 022124          JMP     RPT           ;GO BACK FOR NEXT EVENT ENTRY
3691
3692 022350 012237 007654          RPTDER: MOV      (R2)+,EVTTMP ;GET ADDRESS OF DEVICE INFO MESSAGE
3693 022354 012237 007706          MOV      (R2)+,DEV1    ;STORE DEVICE REG CONTENTS FOR PRINTING
3694 022360 012237 007710          MOV      (R2)+,DEV2
3695 022364                    PRINTS   #EVTF3,EVTTMP ;PRINT DEVICE REG CONTENTS.
3696 022364 013746 007654                    MOV      EVTTMP,-(SP)
3697 022370 012746 015744                    MOV      #EVTF3,-(SP)
3698 022374 012746 000002                    MOV      #2,-(SP)
3699 022400 010600                    MOV      SP,R0
3700 022402 104416                    TRAP    C$PNTS
3701 022404 062706 000006                    ADD     #6,SP
3702 022410          PRINTS   #EVTF3C,DEV1,DEV2
3703 022410 013746 007710                    MOV      DEV2,-(SP)
3704 022414 013746 007706                    MOV      DEV1,-(SP)
3705 022420 012746 015756                    MOV      #EVTF3C,-(SP)
3706 022424 012746 000003                    MOV      #3,-(SP)
3707 022430 010600                    MOV      SP,R0
3708 022432 104416                    TRAP    C$PNTS
3709 022434 062706 000010                    ADD     #10,SP
3710 022440 000137 022124          JMP     RPT           ;GO BACK FOR NEXT EVENT ENTRY
3711
3712 022444 005037 007706          RPTDVI: CLR     DEV1
3713 022450 005037 007710          CLR     DEV2          ;CLEAR UPPER BYTES OF DEV1 & DEV2 BEFORE USE
3714 022454 112237 007706          MOV     (R2)+,DEV1    ;STORE SETUP OPERATION PARAMETERS FOR PRINTING
3715 022460 112237 007710          MOV     (R2)+,DEV2
3716 022464 012237 007712          MOV     (R2)+,DEV3
3717 022470 012237 007714          MOV     (R2)+,DEV4
3718 022474 010246          MOV     R2,-(SP)     ;SAVE R2 ON THE STACK
3719 022476 004737 023712          JSR     PC,SHWOP     ;GO PRINT MODE, MAINT-LOOP TYPE, PARAMTERS.
3720 022502 012602          MOV     (SP)+,R2     ;RESTORE R2
3721 022504 000137 022124          JMP     RPT           ;GO BACK FOR NEXT EVENT ENTRY
3722
3723          ;:REPORT END OF PASS OR ^C ABORT
3724 022510          RPTABO:
3725 022510 012237 007650          RPTTEOP: MOV     (R2)+,EVTADD
3726 022514 012237 007652          MOV     (R2)+,EVTBCT
3727 022520 012237 007654          MOV     (R2)+,EVTTMP
3728 022524          PRINTS   #EVTF4B,EVTADD,EVTBCT,EVTTMP ;PRINT ADDR,RXBYTES,CMPBYTES.
3729 022524 013746 007654                    MOV     EVTTMP,-(SP)
3730 022530 013746 007652                    MOV     EVTBCT,-(SP)
3731 022534 013746 007650                    MOV     EVTADD,-(SP)

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3732 022540 012746 016215
3733 022544 012746 000004
3734 022550 010600
3735 022552 104416
3736 022554 062706 000012
3737
3738 022560 000137 022124      JMP      RPT          ;THEN GO GET NEXT EVENT ENTRY
3739
3740
3741 022564 012237 007650      RPTDDE: MOV      (R2)+,EVTADD      ;STORE MESSAGE ADDRESS FOR PRINTING
3742 022570 012237 007652      MOV      (R2)+,EVTBCT      ;STORE BYTE COUNT FOR PRINTING
3743 022574 012237 007654      MOV      (R2)+,EVTTMP      ;STORE TOTAL # OF CMP ERRORS
3744 022600      PRINTS #EVT4,EVTADD,EVTBCT,EVTMP ;PRINT ADDR, BYTE CNT, # CMP ERRS
3745 022600 013746 007654      MOV      EVTTMP,-(SP)
3746 022604 013746 007652      MOV      EVTBCT,-(SP)
3747 022610 013746 007650      MOV      EVTADD,-(SP)
3748 022614 012746 016015      MOV      #EVT4,-(SP)
3749 022620 012746 000004      MOV      #4,-(SP)
3750 022624 010600      MOV      SP,RO
3751 022626 104416      TRAP     C$PNTS
3752 022630 062706 000012      ADD     #12,SP
3753 022634 000137 022124      JMP      RPT          ;THEN GO GET NEXT EVENT ENTRY
3754
3755 022640      RPTDLE:
3756 022644 012237 007650      RPTDCK: MOV      (R2)+,EVTADD      ;STORE MSG ADDR FOR PRINT
3757 022644 012237 007652      MOV      (R2)+,EVTBCT      ;STORE BYTE COUNT
3758 022650 012237 007654      MOV      (R2)+,EVTTMP      ;STORE BYTE COUNT COMP
3759 022654      PRINTS #EVT4A,EVTADD,EVTBCT,EVTMP ;PRINT ADDR,RXBYTES,CMPBYTES.
3760 022654 013746 007654      MOV      EVTTMP,-(SP)
3761 022660 013746 007652      MOV      EVTBCT,-(SP)
3762 022664 013746 007650      MOV      EVTADD,-(SP)
3763 022670 012746 016117      MOV      #EVT4A,-(SP)
3764 022674 012746 000004      MOV      #4,-(SP)
3765 022700 010600      MOV      SP,RO
3766 022702 104416      TRAP     C$PNTS
3767 022704 062706 000012      ADD     #12,SP
3768
3769 022710 000137 022124      JMP      RPT          ;THEN GO GET NEXT EVENT ENTRY
3770
3771
3772
3773
3774
3775 022714 012237 007654      RPTMSC: MOV      (R2)+,EVTTMP      ;PRINT CHANGE TYPE
3776 022720      PRINTS #EVT3,EVTMP
3777 022720 013746 007654      MOV      EVTTMP,-(SP)
3778 022724 012746 015744      MOV      #EVT3,-(SP)
3779 022730 012746 000002      MOV      #2,-(SP)
3780 022734 010600      MOV      SP,RO
3781 022736 104416      TRAP     C$PNTS
3782 022740 062706 000006      ADD     #6,SP
3783 022744 012203      MOV      (R2)+,R3          ;PUT OLD MODEM STATUS IN R3 FOR PRINTING
3784 022746 004737 023014      JSR     PC,RPTMSB        ;GO PRINT OLD MODEM STATUS
3785 022752      PRINTS #EVMOCG          ;GO PRINT "CHANGED TO:"
3786 022752 012746 016357      MOV      #EVMOCG,-(SP)
3787 022756 012746 000001      MOV      #1,-(SP)

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3788 022762 010600
3789 022764 104416
3790 022766 062706 000004
3791 022772 012203
3792 022774 004737 023014
3793 023000 000137 022124
3794
3795
3796 023004 012604
3797 023006 012603
3798 023010 012602
3799 023012 000207
3800
3801
3802
3803
3804
3805 023014
3806 023014 012746 016402
3807 023020 012746 000001
3808 023024 010600
3809 023026 104416
3810 023030 062706 000004
3811 023034 012704 007556
3812 023040 012705 007574
3813 023044 005714
3814 023046 001004
3815 023050 112735 000130
3816 023054 005724
3817 023056 000407
3818 023060 032403
3819 023062 001403
3820 023064 112735 000061
3821 023070 000402
3822 023072 112735 000060
3823 023076 020427 007574
3824 023102 002760
3825 023104
3826 023104 012746 016462
3827 023110 012746 000001
3828 023114 010600
3829 023116 104416
3830 023120 062706 000004
3831 023124 000207
3832
3833

```

```

;REPORT MODEM STATUS SUBROUTINE
; PART OF STATISICAL REPORTING (DUMPING EVENT LOG)
RPTMSB: PRINTS #EVMOHD ;PRINT MODEM STATUS HEADER
MOV #EVMOHD, -(SP)
MOV #1, -(SP)
MOV SP, R0
TRAP C$PNTS
ADD #4, SP
MOV #MOBITS, R4 ;MAKE R4 A POINTER TO MODEM SIG. BIT DEF. TABLE
MOV #MOMSGS, R5 ;MAKE R5 A POINTER TO MODEM MSG. POSITION TABLE
6$: TST (R4) ;SEE IF BIT AVAILABLE FROM DEVICE
BNE 7$ ;BR IF THAT MODEM SIG. AVAILABLE
MOVB #'X, @ (R5)+ ;ELSE PUT 'X' IN REPORT IF SIGNAL NOT AVAILABLE
TST (R4)+ ;BUMP R4 TO POINT TO NEXT BIT DEFINITION
BR 9$ ;GO SEE IF CHECKED ALL MODEM SIGNALS
7$: BIT (R4)+, R3 ;IF THERE, SEE IF THAT BIT IN DEVICE'S ENTRY=1
BEQ 8$ ;BR IF BIT (SIGNAL) VALUE =0
MOVB #'1, @ (R5)+ ;IF=1, PUT '1' IN REPORT MESSAGE
BR 9$ ;GO SEE IF ALL MODEM SIGNALS CHECKED
8$: MOVB #'0, @ (R5)+ ;IF BIT(SIGNAL)=0, PUT '0' IN REPORT MESSAGE
9$: CMP R4, #MOBITE ;SEE IF ALL BITS(SIGNALS) CHECKED
BLT 6$ ;LOOP UNTIL ALL SIGNALS(BITS) CHECKED
PRINTS #EVMOST ;THEN PRINT MODEM SIGNAL VALUE MESSAGE
MOV #EVMOST, -(SP)
MOV #1, -(SP)
MOV SP, R0
TRAP C$PNTS
ADD #4, SP
RPTMSE: MOV (R2)+, R3 ;PUT NEW MODEM STATUS IN R3 FOR PRINTING
JSR PC, RPTMSB ;GO PRINT NEW MODEM STATUS
JMP RPT ;THEN GO GET NEXT EVENT
ENDEVT: MOV (SP)+, R4 ;RESTORE R4, R3, R2
MOV (SP)+, R3
MOV (SP)+, R2
RTS PC ;RETURN TO CALLING ROUTINE
RPTMSB: PRINTS #EVMOST ;PRINT MODEM STATUS HEADER
MOV #EVMOST, -(SP)
MOV #1, -(SP)
MOV SP, R0
TRAP C$PNTS
ADD #4, SP
RTS PC ;RETURN TO EVENT DECODING

```

CVCLHC DPV-11 DATA COMM. LINK TEST  
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DUMP BYTES OR WORDS

.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
:--

```

3861	023126	013702	006510	DUMPSR: MOV STADD,R2	;SET R2 UP TO STARTING ADDR.		
3862	023132	005003		DUM4: CLR R3	;CLEAR R3		
3863	023134			PRINTF #BASM1,R2	;PRINT ADDRESS		
3864	023134	010246				MOV R2,-(SP)	
3865	023136	012746	015501			MOV #BASM1,-(SP)	
3866	023142	012746	000002			MOV #2,-(SP)	
3867	023146	010600				MOV SP,R0	
3868	023150	104417				TRAP C\$PNTF	
3869	023152	062706	000006			ADD #6,SP	
3870	023156	005737	006514	DUM3: TST BYTBIT	;IS THIS BYTE OR WORD		
3871	023162	001416		BEQ DUM1	;BR IF WORD		
3872	023164	112237	006534	MOVB (R2)+,TEMP	;MOV BYTE TO TEMP		
3873	023170			PRINTF #BASM3,<B,TEMP>	;PRINT BYTE		
3874	023170	005046				CLR -(SP)	
3875	023172	153716	006534			TSB TEMP,(SP)	
3876	023176	012746	015463			MOV #BASM3,-(SP)	
3877	023202	012746	000002			MOV #2,-(SP)	
3878	023206	010600				MOV SP,R0	
3879	023210	104417				TRAP C\$PNTF	
3880	023212	062706	000006			ADD #6,SP	
3881	023216	000411					
3882	023220			DUM1: BR DUM2			
3883	023220	012246		PRINTF #BASM2,(R2)+	;PRINT WORD		
3884	023222	012746	015472			MOV (R2)+,-(SP)	
3885	023226	012746	000002			MOV #BASM2,-(SP)	
3886	023232	010600				MOV #2,-(SP)	
3887	023234	104417				MOV SP,R0	
3888	023236	062706	000006			TRAP C\$PNTF	
3889	023242	020237	006512	DUM2: CMP R2,ENADD	;COMPARE FOR LAST ADD	ADD #6,SP	

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DUMP BYTES OR WORDS

3890	023246	003005		BGT	DUMEX		;IF DONE EXIT
3891	023250	005203		INC	R3		;ELSE BUMP R3
3892	023252	022703	000010	CMP	#8.,R3		;HAVE WE PRINTED 8 ACCROSS
3893	023256	001725		BEQ	DUM4		;IF SO GO BACK TO 4
3894	023260	000736		BR	DUM3		;ELSE GO BACK AND PRINT ANOTHER
3895							;BYTE OR WORD
3896	023262	000207		DUMEX:	RTS	PC	;RETURN TO CALLER
3897							

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UPDATE TOTAL CHAR. COUNT SUBROUTINE

```

3898 .SBTTL UPDATE TOTAL CHAR. COUNT SUBROUTINE
3899
3900
3901 :++
3902 : FUNCTIONAL DESCRIPTION:
3903 : UPDATES TOTAL CHAR. COUNT TOTCC BASED ON CURCC.
3904 : LAST MESSAGE IS TRUNCATED TO FIT INTO THE
3905 : BUFFER IF TOTAL CHAR. COUNT EXCEEDS 'BUFLIM' A MESSAGE
3906 : IS PRINTED TELLING THE OPERATOR THE TRUNCATION OCCURED.
3907
3908 : INPUTS:
3909 : CURCC= CHAR. COUNT OF MESSAGE BEING ADDED
3910 : TOTCC= TOTAL CHAR COUNT OF BUFFER ITS BEING ADDED TO
3911
3912 : OUTPUTS:
3913 : MESSAGE TO OPERATOR IF MESSAGE TRUNCATED TO FIT
3914
3915 : FUNCTIONAL SIDE EFFECTS:
3916 : LOCATION 'TEMP' USED FOR CALCULATIONS
3917
3918 : CALLING SEQUENCE:
3919 : JSR PC,ADCC ;UPDATED TOTAL CHAR. COUNT
3920 :--
3921 023264 063737 006520 006530 ADDCC: ADD CURCC,TOTCC ;ADD CURRENT TO TOTAL
3922 023272 022737 001000 006530 CMP #BUFLIM,TOTCC ; COMPARE TO 'BUFLIM'
3923 023300 103027 BHS ADDC1 ;IF NOT MORE THEN 'BUFLIM' EXIT
3924
3925 ; PRINT MESSAGE AND TRUNCATE COUNT
3926
3927 023302 PRINTF #MSGTRU
3928 023302 012746 014416 MOV #MSGTRU, -(SP)
3929 023306 012746 000001 MOV #1, -(SP)
3930 023312 010600 MOV SP, R0
3931 023314 104417 TRAP C$PNTF
3932 023316 062706 000004 ADD #4, SP
3933 023322 163737 006520 006530 SUB CURCC,TOTCC ;SUB CURRENT FROM TOTAL
3934 023330 012737 001000 006534 MOV #BUFLIM,TEMP ;MOV 'BUFLIM' TO TEMP
3935 023336 163737 006530 006534 SUB TOTCC,TEMP ;SUB TOTAL FROM 'BUFLIM'
3936 023344 013737 006534 006520 MOV TEMP,CURCC ;AND ESTABLISH NEW CURRENT
3937 023352 063737 006520 006530 ADD CURCC,TOTCC ;ADD 'ADJUSTED CURRENT' TO TOTAL CHAR. CNT.
3938 023360 000207 ADDC1: RTS PC ;RETURN TO CALLER
3939

```

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BUILD MESSAGE BUFFERS SUBROUTINE

```

3940 .SBTTL          BUILD MESSAGE BUFFERS SUBROUTINE
3941
3942
3943 :++
3944 : FUNCTIONAL DESCRIPTION:
3945 :   BLDBUF-- BUILD POINTER TABLE AND BUFFERS
3946 :
3947 :   THIS SUBROUTINE ADDS A MESSAGE TO THE TRANSMIT OR EXPECT LIST
3948 :   USING THE POINTER, BYTE COUNT, AND ADDRESS PASSED TO IT.
3949 :
3950 : INPUTS:
3951 :   CURCC= CHAR. COUNT OF MESSAGE TO BE ADDED
3952 :   CURADD= ADDRESS OF MESSAGE TO BE ADDED
3953 :   CPTR=  ADDRESS OF POINTER TABLE WORD WHERE MESSAGE POINTERS ARE
3954 :           TO BE BUILT
3955 :   MSGTYP= VALUE TO USE AS AN INDEX TO FIND SOURCE OF MESSAGE DATA
3956 :           INDEX INTO DMSGCT() AND DMSGAD().
3957 :
3958 : OUTPUTS:
3959 :   A MESSAGE ADDED TO EITHER TXBUF OR CMPBUF
3960 :   APPROPRIATE POINTERS IN PTRTAB POINTER TABLE
3961 :
3962 : CALLING SEQUENCE:
3963 :   JSR PC,BLDBUF          ;BUILD MESSAGE IN BUFFER AND ADD PTRS.
3964 :
3965 :
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3989 :
3990 :

```

023362				BLDBUF:	MOV	R2,-(SP)		;SAVE R2 AND R3 ON THE STACK
023362	010246				MOV	R3,-(SP)		
023364	010346				MOV	CPTR,R2		
023366	013702	006524						
023372	013722	006526		BLDB1:	MOV	CURADD,(R2)+		;PUT CURRENT ADD ON POINTER TAB
023376	013722	006520			MOV	CURCC,(R2)+		;PUT CURRENT CC ON POINTER TAB
023402	010237	006524			MOV	R2,CPTR		;PUT UPDATED R2 BACK TO CURRENT POINT
023406	013702	006516			MOV	MSGTYP,R2		;GET MESSAGE TYPE TO USE AS INDEX
023412	006302				ASL	R2		;DOUBLE FOR WORD INDEX
023414	013737	006526	006534		MOV	CURADD,TEMP		;MOVE CURRENT ADD TO TEMP
023422	063737	006520	006534		ADD	CURCC,TEMP		;ADD CHAR COUNT TO IT TO GET END
023430	013703	006526			MOV	CURADD,R3		;SET R3 TO CURRENT START ADD
023434	016237	002150	006540	BLDB2:	MOV	DMSGCT(R2),TEMP2		;GET BYTE COUNT
023442	016204	002172			MOV	DMSGAD(R2),R4		;PUT STARTING FROM ADD IN R4
023446	060437	006540			ADD	R4,TEMP2		;ADD IT TO TEMP2 TO GET END OF FROM
023452	112423			BLDB3:	MOVB	(R4)+,(R3)+		;MOV BYTE FROM PATTERN TO BUFFER
023454	020337	006534			CMP	R3,TEMP		;ALL DONE?
023460	001404				BEQ	BLDBEX		;IF SO EXIT
023462	020437	006540			CMP	R4,TEMP2		;IS PATTERN COUNT EXPIRED
023466	001762				BEQ	BLDB2		;IF SO GO START AGAIN
023470	000770				BR	BLDB3		;IF NOT GFT ANOTHER BYTE
023472	063737	006520	006526	BLDBEX:	ADD	CURCC,CURADD		;BUMP CURADD
023500	012603				MOV	(SP)+,R3		;RESTORE R3 AND R2
023502	012602				MOV	(SP)+,R2		
023504	000207				RTS	PC		;RETURN TO CALLER

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CREATE FACSIMILE OF TX BUFFER AND MESSAGE LIST

.SBTTL CREATE FACSIMILE OF TX BUFFER AND MESSAGE LIST

;++

THIS ROUTINE ADDED FOR REV B BY EC

FUNCTIONAL DESCRIPTION:

FACSIMILE: THIS ROUTINE IS USED TO CREATE A FACSIMILE OF THE  
OF THE TRANSMIT LIST AND TRANSMIT BUFFER IN THE  
EXPECTED LIST AND EXPECTED BUFFER. THE ROUTINE IS  
NORMALLY CALLED WHEN USER COMMAND 'SET E [EXPECT]=  
T [TRANSMIT] IS ENTERED.

CALLING SEQUENCE: JSR PC,FACSIMILE

--

DEFINITIONS CMPBUF = EXPECTED DATA BUFFER HOLDS MAX 512 BYTES  
TXBUF = TRANSMIT DATA BUFFER HOLDS MAX 512 BYTES  
TTOTCC = NUMBER OF BYTES IN TXBUF  
PRTTAB = TOP OF MESSAGE LIST POINTER TABLE  
CTOTCC = NUMBER OF BYTES IN EXPECT MESSAGE  
CMPTOT = NUMBER OF EXPECTED MESSAGES  
CMPPTR = EXPECTED MESSAGE LIST POINTER  
TXPTR = TRANSMIT MESSAGE LIST POINTER  
TXMTOT = NUMBER OF TRANSMIT MESSAGES  
CCURAD = STORAGE ADDRESS OF MESSAGE IN CMPBUF  
MSGLIN = MAXIMUM NUMBER OF MESSAGES THAT CAN BE STORED

BEGIN FACSIMILE ROUTINE

(\*COPY TXBUF ==> CMPBUF\*)

..SAVE R1

..INIT R1

..REPEAT

....[CMPBUF]R1=[TXBUF]R1

....R1=R1+1

..UNTIL R1 = BUFLIM

(\*NOW CALCULATE EXPECT LIST MESSAGE POINTER\*)

..CMPPTR = PRTTAB + (2 \* MSGLIM)

(\*NOW PRIME THE WHILE - DO LOOP\*)

..TXPTR = PRTTAB

..CCURAD = CMPBUF

..TXPTR = TXPTR + 2

..CTOTCC = [TXPTR]

..CMPTOT = 0

..WHILE TXMTOT <> CMPTOT DO

....[CMPPTR] = CCURAD

....CMPPTR = CMPPTR + 2

....[CMPPTR] = CTOTCC

....TXPTR = TXPTR + 4

....CCURAD = CCURAD + CTOTCC

....CTOTCC = [TXPTR]

....CMPPTR = CMPPTR + 2

....CMPTOT = CMPTOT + 1

..END WHILE DO

..CTOTCC = TTOTCC

END FACSIMILE ROUTINE

3991  
3992  
3993  
3994  
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3997  
3998  
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CVCLHC DPV-11 DATA COMM. LINK TEST  
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CREATE FACSIMILE OF TX BUFFER AND MESSAGE LIST

```

4047
4048 023506
4049
4050 023506 010146
4051 023510 005001
4052 023512 116161 003150 005150 10$:
4053 023520 005201
4054 023522 020127 001000
4055 023526 001371
4056
4057 023530 012701 000017
4058 023534 006301
4059 023536 006301
4060 023540 012737 006150 006444
4061 023546 000137 006444
4062 023552 005001
4063
4064
4065 023554 012737 006150 006442
4066 023562 012737 005150 006452
4067 023570 062737 000002 006442
4068 023576 017737 162640 006450
4069 023604 005037 006446
4070
4071
4072 023610 023737 006462 006446 30$:
4073 023616 001430
4074 023620 013777 006452 162616
4075 023626 062737 000002 006444
4076 023634 013777 006450 162602
4077 023642 062737 000004 006442
4078 023650 063737 006450 006452
4079 023656 017737 162560 006450
4080 023664 062737 000002 006444
4081 023672 005237 006446
4082 023676 000744
4083
4084 023700 013737 006464 006450 40$:
4085
4086
4087 023706 012601
4088 023710 000207
4089
4090

FACSIMILE:

MOV R1,-(SP) ;SAVE R1
CLR R1 ;INIT R1
MOVB TXBUF(R1),CMPBUF(R1) ;COPY TX BUFFER TO EXPECTED BUFFER
INC R1 ;BUMP INDEX
CMP R1,#BUFLIM ;ALL DATA COPIED ?
BNE 10$ ;NO,BRANCH

20$: MOV #MSGLIM,R1 ;MESSAGE LIMIT
ASL R1 ;MULTIPLY BY 2
ASL R1 ;MULTIPLY BY 2
MOV #PTRTAB,CMPPTR ;TOP OF POINTER TABLE
ADD R1,CMPPTR ;START OF EXPECTED POINTER TABLE
CLR R1 ;INIT R1

;SET UP WHILE - DO LOOP
MOV #PTRTAB, TXPTR ;TX POINTER NOW AT TOP OF TABLE
MOV #CMPBUF,CCURAD ;TRANSFER ADDRESS OF 1ST MESSAGE
ADD #2, TXPTR ;BUMP POINTER
MOV @TXPTR,CTOTCC ;BYTE COUNTER 1ST MESSAGE
CLR CMPTOT ;INIT EXPECTED MESSAGE COUNT

;WHILE TX MESSAGE TOTAL <> EXPECTED MESSAGE TOTAL DO
CMP TXMTOT,CMPTOT ;ALL MESSAGES COPIED ?
BEQ 40$ ;YES,BRANCH
MOV CCURAD,@CMPPTR ;TRANSFER ADDRESS OF MESSAGE
ADD #2,CMPPTR ;BUMP POINTER
MOV CTOTCC,@CMPPTR ;BYTE COUNT OF MESSAGE
ADD #4, TXPTR ;BUMP TX MESSAGE POINTER
ADD CTOTCC,CCURAD ;CALC. TRANSFER ADDRESS
MOV @TXPTR,CTOTCC ;BYTE COUNT NEXT MESSAGE
ADD #2,CMPPTR ;BUMP POINTER
INC CMPTOT ;INCREMENT MESSAGE COUNT
BR 30$ ;DO IT AGAIN

;END WHILE - DO
MOV TTOTCC,CTOTCC ;COPY TOTAL CHARACTER COUNT

;END ROUTINE
MOV (SP)+,R1 ;RESTORE R1
RTS PC ;RETURN

```

CVCLHC DPV-11 DATA COMM. LINK TEST  
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SHOW MODE OF OPERATION, LOOP TYPE AND QUALIFIERS

```

4091 .SBTTL          SHOW MODE OF OPERATION, LOOP TYPE AND QUALIFIERS
4092
4093
4094 :++
4095 : FUNCTIONAL DESCRIPTION:
4096 :   SHWOP - SHOW MODE OF OPERATION, LOOP, QULAIFIERS
4097 :   PRINTED ON THE OPERATOR'S CONSOLE.
4098
4099 : INPUTS:
4100 :   DEV1=  MODE TYPE (MODTYP)
4101 :   DEV2=  MAINT LOOP TYPE (MLTYP)
4102 :   DEV3=  'RUN PASS' COUNT (RPASS) - COUNT DOWN
4103 :   DEV4=  PARAMTERS WORD (PARAM)
4104
4105 : IMPLICIT INPUTS:
4106 :   MODES= TABLE OF ADDRESSES OF MODE NAME STRINGS
4107 :   LOOPS= TABLE OF ADDRESSES OF LOOP TYPE NAMES
4108
4109 : CALLING SEQUENCE:
4110 :   JSR PC,SHWOP
4111 :--
4112 023712 013702 007706 SHWOP:  MOV     DEV1,R2          ;GET THE MODE TYPE IN R2
4113 023716 006302        ASL     R2              ;MAKE IT A WORD TABLE OFFSET
4114 023720 016237 003102 006534  MOV     MODES(R2),TEMP ;GET ADDRESS OF MODE-IN-ASCII
4115 023726 013702 007710        MOV     DEV2,R2          ;GET MAINTENANCE LOOP TYPE
4116 023732 006302        ASL     R2
4117 023734 012737 013715 006542  MOV     #LP00,TEMP3     ;LOAD TEMP3 TO POINT TO '/LOOP='
4118 023742 005702        TST     R2              ;SEE IF /LOOP=XXXXX OR NONE
4119 023744 001003        BNE    10$           ;BR IF /LOOP= OF SOME KIND
4120 023746 012737 013714 006542  MOV     #LP0,TEMP3      ;IF NO LOOP THEN DON'T PRINT '/LOOP='
4121 023754 016237 003120 006536 10$:  MOV     LOOPS(R2),TEMP1 ;GET ADDRESS OF LOOP-IN-ASCII
4122 023762 013737 007712 006540  MOV     DEV3,TEMP2     ;GET NUMBER OF PASSES
4123 023770        PRINTS  #SHF0,TEMP,TEMP3,TEMP1,TEMP2
4124 023770 013746 006540        MOV     TEMP2,-(SP)
4125 023774 013746 006536        MOV     TEMP1,-(SP)
4126 024000 013746 006542        MOV     TEMP3,-(SP)
4127 024004 013746 006534        MOV     TEMP,-(SP)
4128 024010 012746 014501        MOV     #SHF0,-(SP)
4129 024014 012746 000005        MOV     #5,-(SP)
4130 024020 010600        MOV     SP,R0
4131 024022 104416        TRAP   C$PNTS
4132 024024 062706 000014        ADD     #14,SP
4133
4134 024030 005002        CLR     R2              ;NOW SET UP FOR QUALIFIERS IN ASCII
4135 024032 012737 013774 006534  MOV     #PST,TEMP
4136 024040 032737 000001 007714  BIT     #STATB,DEV4     ;SEE IF /STATUS OR /NOSTATUS
4137 024046 001003        BNE    1$              ;BR IF /STATUS
4138 024050 012737 013772 006534  MOV     #PNST,TEMP
4139 024056 012737 014005 006536 1$:  MOV     #PCK,TEMP1
4140 024064 032737 000002 007714  BIT     #DATCKB,DEV4    ;SEE IF /CHECK OR /NOCHECK
4141 024072 001003        BNE    2$              ;BR IF /CHECK
4142 024074 012737 014003 006536  MOV     #PNCK,TEMP1
4143 024102 012737 014015 006540 2$:  MOV     #PEC,TEMP2
4144 024110 032737 000004 007714  BIT     #ECHOB,DEV4     ;SEE IF /ECHO OR /NOECHO
4145 024116 001003        BNE    4$              ;BR IF /ECHO
4146 024120 012737 014013 006540  MOV     #PNEC,TEMP2

```

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SHOW MODE OF OPERATION, LOOP TYPE AND QUALIFIERS

```

4147
4148 024126 012737 014034 006544 4$: MOV #PPR,TEMP4
4149 024134 032737 000040 007714 BIT #PROTOB,DEV4 ;SEE OF /PROTOCOL OR /NOPROTOCOL
4150 024142 001003 BNE 3$ ;BR IF /PROTOCOL
4151 024144 012737 014032 006544 MOV #PNPR,TEMP4
4152 024152 012737 014024 006546 3$: MOV #PMS,TEMP5
4153 024160 032737 000010 007714 BIT #MOCHK,DEV4 ;SEE IF /MODEM OR /NOMODEM
4154 024166 001003 BNE 5$ ;BR IF MODEM
4155 024170 012737 014022 006546 MOV #PNMS,TEMP5
4156
4157
4158 024176 5$: PRINTS #SHF1,TEMP,TEMP1,TEMP2,TEMP5,TEMP4 ;,TEMP3
4159 024176 013746 006544 MOV TEMP4,-(SP)
4160 024202 013746 006546 MOV TEMP5,-(SP)
4161 024206 013746 006540 MOV TEMP2,-(SP)
4162 024212 013746 006536 MOV TEMP1,-(SP)
4163 024216 013746 006534 MOV TEMP,-(SP)
4164 024222 012746 014537 MOV #SHF1,-(SP)
4165 024226 012746 000006 MOV #6,-(SP)
4166 024232 010600 MOV SP,R0
4167 024234 104416 TRAP C$PNTS
4168 024236 062706 000016 ADD #16,SP
4169 024242 000207 RTS PC ;RETURN
4170
4171

```

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TRAVERSE COMMAND LINE SUBROUTINES

```

4172 .SBTTL          TRAVERSE COMMAND LINE SUBROUTINES
4173
4174
4175     .++
4176     P$TRV SUBROUTINE
4177     ;PARSE THE COMMAND LINE SUBROUTINE
4178     ;TAKE ACTIONS (VIA ACTION TREE) AS PARSING LINE
4179     ;PARSING DIRECTIONS FROM "CLI PARSING NODES"
4180     REGS USED:
4181
4182     R1,R5=SCRATCH                                P$NUM=NUMERIC CODE FROM DATA
4183     R2=ACTION CODE PARAMETER FROM TREE
4184     R3=PARSE TREE POINTER
4185     R4=INPUT STRING POINTER
4186     CALLING SEQUENCE:
4187     JSR      PC,P$TRV
4188     .--
4189
4190 P$TRV:
4191     MOV      P$BUFA,R4
4192     MOV      P$TREE,R3
4193 P$TR5: TSTB   (R4)                                ;SEE IF ANY CHARS LEFT IN INPUT STRING
4194     BEQ      P$EXIT                                ;BR IF NO
4195     CMPB    (R3),#11.                             ;SEE IF SPECIAL CLI CHAR CODE OR ASCII
4196     BGT     20$                                    ;BR IF REGULAR ASCII CHAR.
4197     MOVB   (R3),R5                                ;GET SPECIAL CHAR CODE INTO R5
4198     ASL    R5
4199     MOV    10$(R5),R5                             ;BUILD TRAVERSE ROUTINE ADDRESS
4200     ADD    #10$,R5
4201     JSR   PC,(R5)                                ;JSR TO SPECIAL CLI TRAVERSE ROUTINE
4202     BR    P$TR5                                  ;GO SEE IF MORE OF STRING LEFT
4203
4204
4205     10$: .WORD  TRVERR-10$                        ;TRAVERSE TABLE FOR "CLI FUNCTIONS"
4206         .WORD  TRVEXI-10$                        :1
4207         .WORD  TRVBR-10$                          :2
4208         .WORD  TRVBIF-10$                         :3
4209         .WORD  TRVSPA-10$                         :4
4210         .WORD  TRVNUM-10$                         :5
4211         .WORD  TRVALP-10$                         :6
4212         .WORD  TRVALN-10$                         :7
4213         .WORD  TRVOCT-10$                         :8
4214         .WORD  TRVDEC-10$                         :9
4215         .WORD  TRVSTR-10$                        :10
4216
4217     ;NOT A SPECIAL CODE
4218
4219     20$: CMPB  (R3),(R4)                          ;SEE IF FIRST CHAR OF STRING IS A MATCH
4220         BEQ   22$                                    ;BR IF A MATCH
4221         JSR   PC,TRVBR                               ;IF NOT A MATCH, GO TAKE MISS BRANCH
4222         BR   P$TR5                                  ; THEN GO BACK PT'G TO MISS NODE
4223     22$: JSR   PC,TRVACT                             ;IF A MATCH, GO DO ACTION DEFINED BY
4224         ADD   #4,R3                                  ; ACTION CODE IN CLI NODE, THEN
4225         ; ADJUST PTR TO NEXT CLI NODE
4226         INC   R4
4227         BR   P$TR5                                  ;ADJUST BUF PTR TO NEXT CHAR IF MATCH

```

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TRAVERSE COMMAND LINE SUBROUTINES

```

4228
4229 024362 000207 P$EXIT: RTS PC ;RETURN FROM PARSER
4230
4231 ;-----
4232
4233 ;GOTO USER ACTION ROUTINE
4234 024364 116302 000001 TRVACT: MOVB 1(R3),R2 ;GET ACTION CODE FROM CLI NODE
4235 024370 042702 177400 BIC #177400,R2 ;CLEAR ANY SIGN EXTENSION
4236 024374 013705 003136 MOV P$ACT,R5 ;GET ADDRESS OF CLI ACTION ROUTINE
4237 024400 004715 JSR PC,(R5) ;GO DO ACTION DEFINED BY CODE
4238 024402 000207 RTS PC ;RETURN TO CALLING CODE
4239
4240 ;TAKE BRANCH IN TREE
4241 024404 016305 000002 TRVBRC: MOV 2(R3),R5 ;GET BRANCH DISPLACEMENT FROM TREE
4242 024410 060503 ADD R5,R3 ;AND POINT R3 TO THE 'MISS' NODE
4243 024412 000207 RTS PC ;RETURN TO P$TRV
4244
4245 ;NO BRANCH TAKEN
4246 024414 062703 000004 TRVNOB: ADD #4,R3 ;THINGS OK, UPDATE R3 TO POINT TO NEXT
4247 024420 000207 RTS PC ;NODE AND RETURN TO P$TRV
4248
4249 ;-----
4250 024422 004737 024364 TRVERR: JSR PC,TRVACT ;TAKE ERROR ACTION
4251 024426 112737 177777 003147 MOVB #-1,P$GDBD ;SET ERROR RETURN FLAG
4252 024434 005726 TST (SP)+ ;GET RID OF 'JSR PUSH TO TRVERR'
4253 024436 000137 024362 JMP P$EXIT ;RETURN DIRECT TO EXIT OF P$TRV ROUTINE
4254
4255 024442 004737 024364 TRVEXI: JSR PC,TRVACT ;TAKE EXIT ACTION
4256 024446 105037 003147 CLRB P$GDBD ;SET GOOD/BAD FLAG TO 'SUCCESS (0)'
4257 024452 005726 TST (SP)+ ;GET RID OF 'JSR PUSH TO TRVEXI'
4258 024454 000137 024362 JMP P$EXIT ;RETURN DIRECT TO EXIT OF P$TRV ROUTINE
4259
4260 024460 004737 024364 TRVBR: JSR PC,TRVACT ;GO TAKE BRANCH ACTION
4261 024464 000137 024404 JMP TRVBRC
4262
4263 024470 004737 024364 TRVBIF: JSR PC,TRVACT
4264 024474 105737 003147 TSTB P$GDBD ;SEE IF P$GDBD SET OR CLEARED BY ACTION
4265 024500 001402 BEQ 1$ ;IF CLEAR FALL THRU TO NEXT NODE
4266 024502 000137 024404 JMP TRVBRC ;ELSE TAKE THE 'MISS' BRANCH
4267 024506 000137 024414 1$: JMP TRVNOB ;JUST UPDATE TO NEXT NODE IF THINGS OK
4268
4269 024512 005005 TRVSPA: CLR R5 ;CLEAR 'SPACE OR TAB FOUND' FLAG
4270 024514 121427 000011 1$: CMPB (R4),#11 ;SEE IF CHAR. IN CMD LINE= TAB
4271 024520 001003 BNE 2$ ;BR IF NO, NOT A TAB
4272 024522 005204 INC R4 ;INC INPUT STRING POINTER
4273 024524 005205 INC R5 ;INDICATE A TAB FOUND
4274 024526 000772 BR 1$ ;GO CHECK NEXT CHAR
4275
4276 024530 121427 000040 2$: CMPB (R4),#40 ;SEE IF CHAR. IN CMD LINE= SPACE
4277 024534 001003 BNE 10$ ;BR IF NO, NON-SPACE OR NON-TAB CHAR.
4278 024536 005204 INC R4 ;INC INPUT STRING POINTER
4279 024540 005205 INC R5 ;INDICATE A SPACE FOUND
4280 024542 000764 BR 1$ ;GO CHECK NEXT CHAR
4281 024544 005705 10$: TST R5 ;SEE IF ANY SPACES OR TABS FOUND
4282 024546 001404 BEQ 15$ ;BR IF NO, TAKE NO ACTION
4283 024550 004737 024364 JSR PC,TRVACT ;GO TAKE ACTION IF ANY FOUND

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TRAVERSE COMMAND LINE SUBROUTINES

```

4284 024554 000137 024414          JMP      TRVNOB          ;JUST SO UPDATE R3 TO NEXT NODE IF OK
4285 024560 000137 024404    15$:    JMP      TRVBRC          ;TAKE BRANCH (MISS) IF NONE FOUND
4286
4287
4288 024564 012737 000012 003144  TRVDEC: MOV      #10.,P$RADX      ;USE DECIMAL AS RADIX AND ASSUME +
4289 024572 000137 024604          JMP      TRVNMA
4290 024576          TRVOCT: ;(SAME AS TRVNUM SINCE DEFAULT RADIX IS OCTAL)
4291 024576 012737 000010 003144  TRVNUM: MOV      #8.,P$RADX      ;USE OCTAL AS RADIX AND ASSUME +
4292 024604 005005          TRVNMA: CLR      R5              ;CLEAR DIGIT COUNTER
4293 024606 121427 000053          CMPB     (R4),#'+'          ;SEE IF THERE'S A + SIGN THERE
4294 024612 001001          BNE     10$                ; BR IF NO
4295 024614 000406          BR      11$                ; ELSE P$RADX ALREADY SAYS +, JUST BR
4296 024616 121427 000055    10$:    CMPB     (R4),#'-'          ;SEE IF THERE'S A - SIGN THERE
4297 024622 001004          BNE     1$                  ; BR IF NO
4298 024624 112737 177777 003145  MOVB     #-1,P$RADX+1      ;SET 'MINUS FLAG' (HI BYTE OF P$RADX)
4299 024632 005204    11$:    INC      R4                  ;BUMP R4 TO POINT TO FIRST CHAR
.300
4301 024634 121427 000060    1$:    CMPB     (R4),#60          ;SEE IF CHAR. LESS THAN A '0'
4302 024640 002434          BLT     2$                  ;BR IF YES (NOT NUMERIC)
4303 024642 121427 000067          CMPB     (R4),#67          ;SEE IF CHAR. GREATER THAN A '7'
4304 024646 003426          BLE     13$                 ; BR IF YES
4305 024650 123727 003144 000012  CMPB     P$RADX,#10.       ;SEE IF IN DECIMAL MODE
4306 024656 001417          BEQ     12$                 ; BR IF YES (CAN USE HIGHER LIMIT)
4307 024660 121427 000071          CMPB     (R4),#71          ;SEE IF DIGIT WAS A 8 OR 9
4308 024664 003022          BGT     2$                  ;BR IF NON-NUMERIC
4309 024666          PRINTF #CLIBRX           ;ELSE WAS A 8 OR 9 WHEN IN OCTAL RADIX
4310 024666 012746 011702          MOV      #CLIBRX,-(SP)
4311 024672 012746 000001          MOV      #1,-(SP)
4312 024676 010600          MOV      SP,R0
4313 024700 104417          TRAP    C$PNTF
4314 024702 062706 000004          ADD     #4,SP
4315 024706 112737 177777 003147  MOVB     #-1,P$GDBD        ;SET ERROR RETURN FLAG
4316 024714 000474          BR      5$                  ; PRINT ERROR AND TAKE MISS
4317
4318 024716 121427 000071    12$:    CMPB     (R4),#71          ;SEE IF CHAR. GREATER THAN A '9'
4319 024722 003003          BGT     2$                  ;BR IF YES (NOT NUMERIC)
4320 024724 005204    13$:    INC      R4                  ;UPDATE CMD LINE PTR TO NEXT CHAR.
4321 024726 005205          INC      R5                  ;INDICATE A NUMERIC FOUND
4322 024730 000741          BR      1$                  ;GO LOOK AT NEXT CHAR.
4323
4324 024732 005705    2$:    TST     R5                  ;SEE IF FOUND ANY NUMERICS
4325 024734 001464          BEQ     5$                  ;BR IF NO, TAKE 'MISS' BRANCH
4326 024736 010401          MOV     R4,R1               ;GET POINTER TO START OF NUMERIC STRING
4327 024740 160501          SUB     R5,R1
4328 024742 005037 003142          CLR     P$NUM               ;CLEAR LOC. WHERE VALUE WILL BE STORED
4329 024746 112102    3$:    MOVB     (R1)+,R2           ;GET ASCII CHAR AND CONVERT IT TO A #
4330 024750 162702 000060          SUB     #60,R2
4331 024754 006337 003142          ASL     P$NUM               ;SHIFT CURRENT VALUE TO MAKE ROOM
4332 024760 103437          BCS     7$                  ;ERROR IF NUMBER TOO BIG
4333 024762 013737 003142 003140  MOV     P$NUM,P$CNT         ;SAVE FOR LATER IN CASE DECIMAL RADIX
4334 024770 006337 003142          ASL     P$NUM
4335 024774 103431          BCS     7$                  ;ERROR IF NUMBER TOO BIG
4336 024776 006337 003142          ASL     P$NUM
4337 025002 103426          BCS     7$                  ;ERROR IF NUMBER TOO BIG
4338 025004 123727 003144 000012  CMPB     P$RADX,#10.       ;SEE IF DECIMAL RADIX
4339 025012 001004          BNE     4$                  ;BR IF NOT EQUAL

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4340 025014 063737 003140 003142 ADD P$CNT,P$NUM
4341 025022 103416 BCS 7$ ;ERROR IF NUMBER TOO BIG
4342 025024 060237 003142 4$: ADD R2,P$NUM ;ERROR IF NUMBER TOO BIG
4343 025030 103413 BCS 7$
4344 025032 005305 DEC R5
4345 025034 001344 BNE 3$
4346 025036 105737 003145 TSTB P$RADX+1 ;SEE IF NUM WAS PRECEDED BY A - SIGN
4347 025042 001402 BEQ 15$ ; BR IF NO
4348 025044 005437 003142 NEG P$NUM ; ELSE NEGATE THE NUMBER BEFORE LEAVING
4349 025050 004737 024364 15$: JSR PC,TRVACT ;SINCE NUMERIC FOUND, GO TAKE ACTION
4350 025054 000137 024414 JMP TRVNOB ;GO POINT R3 TO NEXT NODE
4351
4352 025060 7$: PRINTF #CLINBG ;PRINT NUMBER TOO BIG ERROR
4353 025060 012746 011660 MOV #CLINBG,-(SP)
4354 025064 012746 000001 MOV #1,-(SP)
4355 025070 010600 MOV SP,R0
4356 025072 104417 TRAP C$PNTF
4357 025074 062706 000004 ADD #4,SP
4358 025100 112737 177777 003147 5$: MOVB #-1,P$GDBD ;SET ERROR RETURN FLAG
4359 025106 000137 024404 JMP TRVBRC ;TAKE 'MISS' BRANCH
4360
4361
4362 025112 005005 TRVALP: CLR R5 ;CLEAR ALPHA FOUND FLAG
4363 025114 121427 000101 1$: CMPB (R4),#101 ;SEE IF CHAR. LESS THAN A 'A'
4364 025120 002406 BLT 2$ ;BR IF YES (NOT ALPHA)
4365 025122 121427 000132 CMPB (R4),#132 ;SEE IF CHAR. GREATER THAN A 'Z'
4366 025126 003003 BGT 2$ ;BR IF YES (NOT ALPHA)
4367 025130 005204 INC R4 ;UPDATE CMD LINE PTR TO NEXT CHAR
4368 025132 005205 INC R5 ;INDICATE AN ALPHA WAS FOUND
4369 025134 000767 BR 1$ ;GO LOOK AT NEXT CHAR.
4370 025136 005705 2$: TST R5 ;SEE IF ANY ALPHA'S WERE FOUND
4371 025140 001404 BEQ 3$ ;BR IF NO
4372 025142 004737 024364 JSR PC,TRVACT ;IF ANY FOUND TAKE ACTION
4373 025146 000137 024414 JMP TRVNOB ;THEN UPDATE R3 TO NEXT NODE -NO BRANCH
4374 025152 000137 024404 3$: JMP TRVBRC ;NONE FOUND, TAKE MISS BRANCH
4375
4376 025156 005005 TRVALN: CLR R5 ;CLEAR ALPHANUM FOUND FLAG
4377 025160 121427 000060 10$: CMPB (R4),#60 ;SEE IF CHAR. LESS THAN A '0'
4378 025164 002417 BLT 2$ ;BR IF YES (NOT NUMERIC OR ALPHA)
4379 025166 121427 000072 CMPB (R4),#72 ;SEE IF CHAR. GREATER THAN A '9'
4380 025172 003003 BGT 1$ ;BR IF YES (NOT NUMERIC)
4381 025174 005204 INC R4 ;UPDATE CMD LINE PTR TO NEXT CHAR.
4382 025176 005205 INC R5 ;INDICATE A NUMERIC FOUND
4383 025200 000767 BR 10$ ;GO LOOK AT NEXT CHAR.
4384 025202 121427 000101 1$: CMPB (R4),#101 ;SEE IF CHAR. LESS THAN A 'A'
4385 025206 002406 BLT 2$ ;BR IF YES (NOT ALPHA)
4386 025210 121427 000132 CMPB (R4),#132 ;SEE IF CHAR. GREATER THAN A 'Z'
4387 025214 003003 BGT 2$ ;BR IF YES (NOT ALPHA)
4388 025216 005204 INC R4 ;UPDATE CMD LINE PTR TO NEXT CHAR
4389 025220 005205 INC R5 ;INDICATE AN ALPHA FOUND
4390 025222 000767 BR 10$ ;GO LOOK AT NEXT CHAR.
4391 025224 005705 2$: TST R5 ;SEE IF ANY ALPHANUM'S WERE FOUND
4392 025226 001404 BEQ 3$ ;BR IF NO
4393 025230 004737 024364 JSR PC,TRVACT ;IF ANY FOUND TAKE ACTION
4394 025234 000137 024414 JMP TRVNOB ;THEN UPDATE R3 TO NEXT NODE -NO BRANCH
4395 025240 000137 024404 3$: JMP TRVBRC ;NONE FOUND, TAKE MISS BRANCH

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TRAVERSE COMMAND LINE SUBROUTINES

```

4396
4397
4398
4399 025244 010401 TRVSTR: MOV R4,R1 ;POINT R1 TO CMD STRING
4400 025246 010305 MOV R3,R5
4401 025250 062705 000006 ADD #6,R5 ;POINT R5 TO MATCH STRING FROM CLI NODE
4402 025254 005037 003140 CLR P%CNT ;CLEAR CHAR MATCH COUNT
4403 025260 105715 2$: TSTB (R5) ;SEE IF END OF MATCH STRING YET
4404 025262 001411 BEQ 10$ ;BR IF YES
4405 025264 105711 TSTB (R1) ;SEE IF END OF CMD LINE YET
4406 025266 001407 BEQ 10$ ;BR IF YES
4407 025270 121115 CMPB (R1),(R5) ;SEE IF CHARACTERS MATCH
4408 025272 001005 BNE 10$ ;BR IF NO
4409 025274 005237 003140 INC P%CNT ;MATCH -INCREMENT MATCH COUNT
4410 025300 005201 INC R1 ;UPDATE STRING POINTERS
4411 025302 005205 INC R5
4412 025304 000765 BR 2$ ;BR TO CONTINUE CHECKING CHARS.
4413
4414 025306 005737 003140 10$: TST P%CNT ;WHEN DONE SEE IF ANY MATCHES FOUND
4415 025312 001406 BEQ 15$ ;BR IF NO, GO TAKE THE MISS BRANCH
4416 025314 010104 MOV R1,R4 ;POINT CMD POINTER TO END OF STRING &
4417 025316 004737 024364 JSR PC,TRVACT ;IF A MATCH FOUND, GO DO MATCH ACTION
4418 025322 066303 000004 ADD 4(R3),R3 ;UPDATE R3 TO NEXT NODE (NO BRANCH)
4419 025326 000207 RTS PC ; (NO RETURN THRU TRVNOB SINCE DIFFERNT
4420 ; DISPLACEMENT DUE TO MATCH STRING)
4421 025330 000137 024404 15$: JMP TRVBRC ; GO TAKE BRANCH
4422
4423 ; (PARSED OK), -1 IF ILL CMD.....
4424
4425

```

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REPORT CODING SECTION

.SBTTL REPORT CODING SECTION

;++  
: THE REPORT CODING SECTION CONTAINS THE  
: 'PRINTS' CALLS THAT GENERATE STATISTICAL REPORTS.  
:--

4426  
4427  
4428  
4429  
4430  
4431  
4432  
4433  
4434  
4435  
4436  
4437  
4438  
4439  
4440  
4441  
4442  
4443  
4444  
4445  
4446

025334  
025334  
  
025334 004737 020610  
  
  
025340  
025340  
025340 104425

BGNRPT

JSR PC,REPORT

ENDRPT

LSRPT::

;CALL SUBROUTINE TO DUMP EVENT LOG  
; AND BASE TABLE

L10010: TRAP CSRPT

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PROTECTION TABLE

.SBTTL PROTECTION TABLE

:++  
: THIS TABLE IS USED BY THE RUNTIME SERVICES  
: TO PROTECT THE LOAD MEDIA.  
:--

4447  
4448  
4449  
4450  
4451  
4452  
4453  
4454  
4455  
4456  
4457  
4458  
4459  
4460  
4461  
4462

025342  
025342

177777  
177777  
177777

025350

BGNPROT

-1  
-1  
-1

ENDPROT

L\$PROT::

;OFFSET INTO P-TABLE FOR CSR ADDRESS  
;OFFSET INTO P-TABLE FOR MASSBUS ADDRESS  
;OFFSET INTO P-TABLE FOR DRIVE NUMBER

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INITIALIZE SECTION

```

4463 .SBTTL INITIALIZE SECTION
4464
4465
4466 :++
4467 : THE INITIALIZE SECTION CONTAINS THE CODING THAT IS PERFORMED
4468 : AT THE BEGINNING OF EACH PASS.
4469 :--
4470 025350          BGNINIT
4471 025350          L$INIT::
4472
4473 025350 005037 003010 CLR    KEYWD1      ;INIT COMMAND STORAGE VARIABLE
4474 025354 005737 006562 TST    DCLFLG     ;CLEANUP AND EXIT? REV B EC
4475 025360 001403          BEQ    INIT1       ;NO,BRANCH REV B EC
4476 025362 005037 006562 CLR    DCLFLG     ;CLEAR FLAG REV B EC
4477 025366          DOCLN
4478 025366 104444          ;GO CLEANUP AND EXIT REV B FC
4479                                     TRAP    C$DCLN
4480 025370 012737 177777 006564 INIT1: MOV    #-1,RESFLG  ;SET RESTART FLAG
4481 025376          REDEF  #EF.START ;IF HERE CAUSE OF START,DO SOME INIT
4482 025376 012700 000040          MOV    #EF.START,RO
4483 025402 104447          TRAP    C$REFG
4484 025404          BCOMPLETE      START
4485 025404 103417          ;IF HERE CAUSE OF RESTART, DO SOME INIT
4486 025406          REDEF  #EF.RESTART ;IF HERE CAUSE OF RESTART, DO SOME INIT
4487 025406 012700 000037          MOV    #EF.RESTART,RO
4488 025412 104447          TRAP    C$REFG
4489 025414          BCOMPLETE      RESTRT
4490 025414 103513          ;SEE IF WE'RE HERE CAUSE OF A CONTINUE
4491 025416          REDEF  #EF.CONTINUE ;SEE IF WE'RE HERE CAUSE OF A CONTINUE
4492 025416 012700 000036          MOV    #EF.CONTINUE,RO
4493 025422 104447          TRAP    C$REFG
4494 025424          BNCOMPLETE     S1
4495 025424 103002          ;BR IF NOT HERE CAUSE OF CONITNUE
4496 025426 000137 026116          BCC    S1
4497 025432          S1: JMP    ENDIT
4498 025432 012700 000035          REDEF  #EF.NEW
4499 025436 104447          ;JMP IF HERE CAUSE OF A CONTINUE
4500 025440          BCOMPLETE      NEW
4501 025440 103521          ;SEE IF THIS IS A 'NEW PASS'
4502 025442 000523          MOV    #EF.NEW,RO
4503                                     TRAP    C$REFG
4504 025444 005037 006564          ;IF YES, BR AROUND LOGUNIT # SETUP
4505 025450 005037 006624          BCS    NEW
4506
4507 025454 012702 006620          ;CLEAR RESTART FLAG SINCE HERE ON START
4508 025460          START: CLR    RESFLG
4509 025460 012700 000114          CLR    CLKVEC
4510 025464 104462          ;CLEAR CLK VECTOR PTR. AS A FLAG IN
4511 025466 010001          ; NO CLOCK IS FOUND.
4512 025470          MOV    #CLKCSR,R2
4513 025470 103006          ;SETUP R2 AS A PTR. TO CLOCK INFO BLOCK
4514 025472 004737 017730          CLOCK  L,R1
4515 025476 012737 000100 006630 ;LOOK FOR A LINE CLOCK
4516 025504 000457          MOV    #'L,RO
4517                                     TRAP    C$CLCK
4518 025506          S2: BNCOMPLETE     S2
4519                                     MOV    RO,R1
4520                                     BCC    S2
4521                                     ; IF NONE THERE GO LOOK FOR A P-CLOCK
4522                                     ; GO SET UP CLOCK INFO TABLE & CLK VEC.
4523                                     ;SETUP THE ENABLE LINE CLOCK DATA
4524                                     ;LOOK FOR A P-CLOCK SINCE NO LINE CLOCK

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INITIALIZE SECTION

```

4519 025516 012700 000120          MOV    #'P,RO
4520 025512 104462          TRAP   C$CLK
4521 025514 010001          MOV    RO,R1
4522 025516          BNCOMplete    S3          ; IF NONE THERE GO SEE IF THIS IS LSI
4523 025516 103017          BCC     S3
4524 025520 004737 017730      JSR    PC,CLKSET          ; ELSE GO SET UP CLOCK INFO & VECTOR
4525 025524 062737 000002 006620  ADD    #2,CLKCSR          ;POINT CLKCSR TO P-CLK COUNT SET REG.
4526 025532 012777 001600 161060  MOV    #PCLKCT,@CLKCSR   ;LOAD CLK SET REG. WITH COUNT VALUE
4527 025540 162737 000002 006620  SUB    #2,CLKCSR          ;POINT CLKCSR BAC TO P-CLK CSR
4528 025546 012737 000111 006630  MOV    #PCLKEN,CLKEN     ;SETUP THE ENABLE THE P-CLK DATA
4529 025554 000433          BR     RESTRT
4530
4531          S3:          READBUS          ;READ BUS TYPE TO SEE IF ON AN LSI
4532 025556 104407          TRAP   C$RDBU
4533 025560          BNCOMplete    S4          ;BR IF NOT, NO CHANCE OF A CLOCK
4534 025560 103021          BCC     S4
4535 025562 012737 000100 006624  MOV    #100,CLKVEC       ;LOAD 100 AS CLK VECTOR
4536 025570 005037 006622          CLR    CLKBR             ;LOAD 0 AS CLK INT. LEVEL
4537 025574 012737 006630 006620  MOV    #CLKEN,CLKCSR     ;KLUDGE UP THE CSR & ENABLE DATA LOCS
4538 025602          GMANID L5060,CLKHZ,D,377.50.,60.,YES
4539 025602 104443          TRAP   C$GMAN
4540 025604 000406          BR     10000$
4541 025606 006626          .WORD CLKHZ
4542 025610 000052          .WORD T$CODE
4543 025612 014063          .WORD L5060
4544 025614 000377          .WORD 377
4545 025616 000062          .WORD T$LLOLIM
4546 025620 000074          .WORD T$HILIM
4547 025622          10000$:
4548 025622 000410          BR     RESTRT
4549
4550          S4:          PRINTF #BDCLK          ;INFORM OPR. NO CLOCK, & EXIT INIT
4551 025624 012746 014202          MOV    #BDCLK,-(SP)
4552 025630 012746 000001          MOV    #1,-(SP)
4553 025634 010600          MOV    SP,RO
4554 025636 104417          TRAP   C$PNTF
4555 025640 062706 000004          ADD    #4,SP
4556
4557 025644 005037 006632          RESTRT: CLR    TIMMIN          ;CLEAR TIME SINCE START LOCATIONS
4558 025650 005037 006634          CLR    TIMSEC
4559 025654 013737 006626 006636  MOV    CLKHZ,TIMTCK      ;LOAD TICKS/SEC
4560 025662 012702 006650          MOV    #EVTLOG,R2       ;INIT EVENT TABLE TO ALL 1'S AFTER EACH
4561 025666 010237 006646          MOV    R2,EVTPTR       ; START OR RES AND INIT TABLE POINTER
4562 025672 012722 177777          1$:    MOV    #-1,(R2)+
4563 025676 020227 007552          CMP    R2,#EVTEND
4564 025702 001373          BNE    1$              ;SEE IF REACHED END OF TABLE
4565
4566 025704 012737 177777 006556  NEW:    MOV    #-1,LOGUNT    ;INITIALIZE LOGICAL UNIT #
4567
4568 025712 005237 006556          GEIPRM: INC    LOGUNT          ;POINT TO NEXT LOGICAL UNIT
4569 025716 023737 006556 002012  CMP    LOGUNT,L$UNIT    ;SEE IF PAST MAX. LOG. UNIT #
4570 025724 002367          BGE    NEW             ;BR IF YES, AND START OVER
4571
4572          GPHARD LOGUNT,R1          ;GET THE P-TABLE FOR THIS LOG. UNIT
4573 025726 013700 006556          MOV    LOGUNT,RO
4574 025732 104442          TRAP   C$GPHRD

```

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INITIALIZE SECTION

```

4575 025734 010001
4576 025736          BNCOMPLETE      GETPRM          ;IF NO P-TABLE AVAIL., GO GET NEXT ONE
4577 025736 103365          ;MOV      R0,R1
4578          ;BCC      GETPRM
4579 025740 011137 006572      MOV      (R1),FHDPLX          ;PUT FULL OR HALF DUPLEX ANSWER IN LOC.
4580
4581
4582          ;DEVICE DEPENDENT PART OF GETTING INFO FROM P-TABLE
4583
4584 025744 016137 000002 011452      MOV      2(R1),RXCSR          ;STORE AWAY CSR ADDRESSES
4585
4586
4587 025752 016137 000002 011454      MOV      2(R1),PCSAR
4588 025760 062737 000002 011454      ADD      #2,PCSAR
4589 025766 016137 000002 011456      MOV      2(R1),RDSR
4590 025774 062737 000002 011456      ADD      #2,RDSR
4591 026002 016137 000002 011460      MOV      2(R1),TXCSR
4592 026010 062737 000004 011460      ADD      #4,TXCSR
4593 026016 016137 000002 011462      MOV      2(R1),TDSR
4594 026024 062737 000006 011462      ADD      #6,TDSR
4595
4596 026032 016137 000004 011464      MOV      4(R1),INVEC          ;STORE AWAY INPUT INTERRUPT VECTOR
4597 026040 016137 000004 011466      MOV      4(R1),OUTVEC
4598 026046 062737 000004 011466      ADD      #4,OUTVEC          ;BUILD OUTPUT INTERRUPT VECTOR
4599 026054 016137 000006 011470      MOV      6(R1),INTPRI          ;STORE AWAY INTERRUPT PRIORITY
4600 026062 016137 000014 011524      MOV      14(R1),RNODE          ;STORE AWAY THE REMOTE NODE TYPE
4601 026070 016137 000010 037126      MOV      10(R1),MPPTP          ;MULTI-POINT = 1
4602 026076 001004          BNE      10$          ;IF MTP THEN GET TRIB ADDRESS FROM P-TABLE
4603 026100 112737 000001 037061      MOV      #1,TRIBN          ;PTP TRIB ADDRESS ALWAYS 1
4604 026106 000403          BR       ENDIT          ;BRANCH
4605 026110 116137 000012 037061      MOV      12(R1),TRIBN          ;STORE AWAY TRIB NUMBER
4606 026116          ;10$:
4607 026116          ENDIT:
4608 026116 012746 000340          SETVEC  CLKVEC,#CLKINT,#340          ;SETUP CLOCK VECTOR
4609 026122 012746 017754          MOV      #340,-(SP)
4610 026126 013746 006624          MOV      #CLKINT,-(SP)
4611 026132 012746 000003          MOV      CLKVEC,-(SP)
4612 026136 104437          MOV      #3,-(SP)
4613 026140 062706 000010          TRAP    C$$VEC
4614          ADD      #10,SP
4615          ;DEVICE DEPENDENT VECTOR SETUP
4616
4617 026144          SETVEC  INVEC,#DVRXI,#PRI04          ;SETUP INPUT INTERRUPT VECTOR
4618 026144 012746 000200          MOV      #PRI04,-(SP)
4619 026150 012746 035554          MOV      #DVRXI,-(SP)
4620 026154 013746 011464          MOV      INVEC,-(SP)
4621 026160 012746 000003          MOV      #3,-(SP)
4622 026164 104437          TRAP    C$$VEC
4623 026166 062706 000010          ADD      #10,SP
4624 026172          SETVEC  OUTVEC,#DVTXI,#PRI04          ;SETUP OUTPUT INTERRUPT VECTOR
4625 026172 012746 000200          MOV      #PRI04,-(SP)
4626 026176 012746 036254          MOV      #DVTXI,-(SP)
4627 026202 013746 011466          MOV      OUTVEC,-(SP)
4628 026206 012746 000003          MOV      #3,-(SP)
4629 026212 104437          TRAP    C$$VEC
4630 026214 062706 000010          ADD      #10,SP

```

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INITIALIZE SECTION

4631							
4632	026220			SETPRI	#PRI00		;SET THE 'RUN' PRIORITY TO 0
4633	026220	012700	000000				MOV #PRI00,R0
4634	026224	104441					TRAP C\$SPRI
4635	026226			EXIT	INIT		
4636	026226	104432					TRAP C\$EXIT
4637	026230	000002					.WORD L10012-
4638							
4639							
4640				.EVEN			
4641							
4642	026232			ENDINIT			
4643	026232						
4644	026232	1044				L10012:	TRAP C\$INIT

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AUTODROP SECTION

```

4645 .SBTTL AUTODROP SECTION
4646
4647
4648 ;++
4649 ; THIS CODE IS EXECUTED IMMEDIATELY AFTER THE INITIALIZE CODE IF
4650 ; THE 'ADR' FLAG WAS SET. THE UNIT(S) UNDER TEST ARE CHECKED TO
4651 ; SEE IF THEY WILL RESPOND. THOSE THAT DON'T ARE IMMEDIATELY
4652 ; DROPPED FROM TESTING.
4653 ;--
4654 026234          BGNAUTO
4655 026234
4656
4657
4658 026234          ENDAUTO
4659 026234
4660 026234 104461          L10013: TRAP C$AUTO
                                L$AUTO::

```

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CLEANUP CODING SECTION

.SBTTL CLEANUP CODING SECTION

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

```

4661
4662
4663
4664
4665
4666
4667
4668 026236          BGNCLN
4669 026236          L$CLEAN::
4670
4671 026236 005077 160356  CLR @CLKCSR      ;DISABLE CLOCK
4672 026242          SETPRI #PRI07      ;SET PROCESSOR PRIORITY BACK TO 7
4673 026242 012700 000340          ;
4674 026246 104441          ;
4675 026250 022737 000057 003010  CMP #EXIT,KEYWD1 ;'EXIT' COMMAND ?
4676 026256 001416          BEQ EXITCLN      ;YES,BRANCH
4677
4678
4679 026260 012737 000026 006534  ;;LOG ^C ABORT IN EVENT LUG
4680 026266 013737 006502 006544  MOV #ABO,TEMP      ;EVENT TYPE
4681 026274 013737 006504 006540  MOV OPVAR,TEMP4    ;START TIME OUTS
4682 026302 013737 006506 006542  MOV PSCNT,TEMP2    ;PASSES
4683 026310 004737 020504          MOV ERRCNT,TEMP3   ;ERRORS
4684
4685 026314          JSR PC,LOGSS      ;GO LOG IT
4686 026314 104433          EXITCLN:BRESET      ;RESET
4687 026316          EXIT CLN
4688 026316 104432          TRAP C$RESET
4689 026320 000002          TRAP C$EXIT
4690
4691
4692
4693
4694 026322          .EVEN
4695 026322          ENDCLN
4696 026322 104412          L10014: TRAP C$CLEAN

```

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DROP UNIT SECTION

```

4697
4698
4699
4700
4701
4702
4703
4704 026324
4705 026324
4706
4707
4708 026324
4709 026324 000167
4710 026326 000000
4711
4712
4713
4714
4715 026330
4716 026330
4717 026330 104453

.SBTTL DROP UNIT SECTION

:++
: THE DROP-UNIT SECTION CONTAINS THE CODING THAT CAUSES A DEVICE
: TO NO LONGER BE TESTED.
:--

          BGNDU

          EXIT  DU

          .EVEN

          ENDDU

          LSDU::

          .WORD JSJMP
          .WORD L10015-2-.

          L10015: TRAP C$DU

```

CVCLHC DPV-11 DATA COMM. LINK TEST  
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ADD UNIT SECTION

```

4718
4719
4720
4721
4722
4723
4724
4725
4726 026332
4727 026332
4728
4729
4730 026332
4731 026332 000167
4732 026334 000000
4733
4734
4735
4736
4737 026336
4738 026336
4739 026336 104452
4740
4741

```

```

.SBTTL ADD UNIT SECTION

:++
: THE ADD-UNIT SECTION CONTAINS ANY CODE THE PROGRAMMER WISHES
: TO BE EXECUTED IN CONJUNCTION WITH THE ADDING OF A UNIT BACK
: TO THE TEST CYCLE.
:--

          BGNAU

                                L$AU::

          EXIT    AU

                                .WORD  JSJMP
                                .WORD  L10016-2-.

          .FVEN

          ENDAU

                                L10016:
                                TRAP    C$AU

```

CVCLHC.DPV-11 DATA COMM. LINK TEST  
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TEST 1: SETUP AND MODES OF OPERATION

.SBTTL TEST 1: SETUP AND MODES OF OPERATION

```

4742
4743
4744
4745
4746
4747
4748
4749
4750
4751
4752
4753 026340          BGNTST
4754 026340
4755
4756
4757
4758          .SBTTL          PROGRAM SETUP SECTION
4759 026340 013777 006630 160252      MOV          CLKEN,@CLKCSR      ;ENABLE THE CLOCK
4760
4761 026346          GTXRXB:
4762 026346 005001          GTRA2:      CLR          R1
4763 026350 012737 000001 006640      MOV          #1,TIMER1          ;SET TIMER TO COUNT 1 TICK
4764 026356 005737 006640          1$:      TST          TIMER1          ;CHECK FOR IT TO BE COUNTED OFF
4765 026362 001412          BEQ          GTRA3          ;BRANCH IF CLOCK EXISTS (COUNTED A TICK)
4766 026364 005301          DEC          R1
4767 026366 001373          BNE          1$          ;KEEP CHECKING UNTIL R1 DOES FULL COUNTDOWN
4768 026370          PRINTF          #NOCLK          ;PRINT BAD CLK MSG AND WARN OF HANG IF TIMEOUT
4769 026370 012746 014226          MOV          #NOCLK,-(SP)
4770 026374 012746 000001          MOV          #1,-(SP)
4771 026400 010600          MOV          SP,R0
4772 026402 104417          TRAP          C$PNTF
4773 026404 062706 000004          ADD          #4,SP
4774
4775 026410 005737 006564          GTRA3:  TST          RESFLG          ;SEE IF HERE AFTER A RESTART.
4776 026414 001112          BNE          GTRA5          ;BR IF HERE CAUSE OF A RESTART
4777
4778          ; CLEAR COUNTS AND SET UP DEFAULTS
4779
4780 026416 005037 006530          GTRA4:  CLR          TOTCC          ;CLEAR TOTAL CHAR. COUNT TEMP. LOC.
4781 026422 005037 006464          CLR          TTOTCC          ; CLEAR TOTAL CHAR. COUNT FOR TX BUFF
4782 026426 005037 006450          CLR          CTOTCC          ; CLEAR TOTAL CHAR. COUNT FOR CMP BUFF
4783 026432 012701 006150          MOV          #PTRTAB,R1          ;INIT TRANSMIT MESSAGE POINTER
4784 026436 010137 006442          MOV          R1, TXPTR
4785 026442 005037 006440          CLR          RXPTR          ; ZERO RX POINTER
4786
4787 026446 012737 006244 006444          MOV          #PTR13,CMPPTR          ;INIT COMPARE MESSAGE POINTER
4788
4789 026454 012737 000005 006516          MOV          #5,MSGTYP          ;SET UP DEFAULT MSG TYPE (QUICK FOX - ITEX MSG)
4790 026462 013737 002162 006520          MOV          MSGJC,CURCC          ;SET UP DEFAULT CHAR COUNT
4791 026470 012737 003150 006466          MOV          #TXBUF,TCURAD          ;SET UP CURRENT ADD TO START OF TX BUFFER
4792 026476 012737 005150 006452          MOV          #CMPBUF,CCURAD          ;SET UP CURRENT ADD TO START OF CMP BUFFER
4793
4794 026504 013737 006466 006526          MOV          TCURAD,CURADD          ;SETUP CURRENT ADDR TO START OF TXBUF
4795 026512 013737 006442 006524          MOV          TXPTR,CPTR          ;SETUP CURRENT POINTER TABLE POINTER FOR TXBUF
4796 026520 004737 023362          JSR          PC,BLDBUF          ; GO BUILD POINTER TABLE AND BUFFER
4797 026524 012737 000001 006462          MOV          #1,TXMTOT          ;BUMP TOTAL MESSAGE COUNT

```

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PROGRAM SETUP SECTION

```

4798
4799 026532 013737 006444 006524      MOV      CMPPTR,CPTR      ;SET UP START OF COMPARE POINTER TABLE
4800 026540 013737 006452 006526      MOV      CCURAD,CURADD   ;SET UP CURRENT ADDR. TO START OF CMPBUF
4801 026546 012737 000005 006516      MOV      #5,MSGTYP
4802 026554 013737 002162 006520      MOV      MSG5C,CURCC
4803 026562 004737 023362                JSR      PC,BLDBUF      ;PUT DEFAULT MESSAGE INTO CMPBUF
4804 026566 012737 000001 006446      MOV      #1,CMPTOT      ;BUMP THE COMP MESSG COUNT
4805 026574 012737 000003 006566      MOV      #ACT,MODTYP    ;SET DEFAULT MODE= ACTIVE
4806 026602 005037 006570                CLR      MLTYP          ;SET DEFAULT MAINTENANCE LOOP MODE =NONE
4807 026606 012737 000001 006576      MOV      #1,RPASS       ;SET UP DEFAULT 'RUN PASS' COUNT TO 1
4808 026614 012737 000002 006574      MOV      #2,PARAM       ;SET UP PROG. PARAMETERS - DATACHECKING ENABLED
4809                                     ;
4810                                     PRINTF  #HLPO           ;
4811 026622 012746 012215                MOV      #HLPO,-(SP)
4812 026626 012746 000001                MOV      #1,-(SP)
4813 026632 010600                MOV      SP,RO
4814 026634 104417                TRAP     C$PNTF
4815 026636 062706 000004                ADD      #4,SP
4816 026642                                     GTRAS: SETVEC  INVEC,#DVRXI,#PRI04 ;DEFAULT NON-PROTOCOL RX INTER. VECTOR
4817 026642 012746 000200                MOV      #PRI04,-(SP)
4818 026646 012746 035554                MOV      #DVRXI,-(SP)
4819 026652 013746 011464                MOV      INVEC,-(SP)
4820 026656 012746 000003                MOV      #3,-(SP)
4821 026662 104437                TRAP     C$SVEC
4822 026664 062706 000010                ADD      #10,SP
4823 026670 042737 000300 006574      BIC      #PRORUN!ABORT,PARAM ;INIT PROTOCOL VARIABLES
4824 026676 013737 006566 007706      MOV      MODTYP,DEV1
4825 026704 013737 006570 007710      MOV      MLTYP,DEV2
4826 026712 013737 006576 007712      MOV      RPASS,DEV3
4827 026720 013737 006574 007714      MOV      PARAM,DEV4
4828 026726 004737 023712                JSR      PC,SHWOP      ;PRINT TO OPERATOR THE CURRENT MODE.....
4829
4830 026732                                     MANUAL          ;SEE IF MANUAL INTERVENTION ALLOWED
4831 026732 104450                TRAP     C$MANI
4832 026734                                     BCOMPLETE      GETCL ; BR IF YES (UAM=0 AND NOT CHAINED)
4833 026734 103412                BCS      GETCL
4834 026736 005737 006576      TST      RPASS          ;SEE IF THIS IS FIRST 'DCLT PASS'
4835 026742 001002                BNE      1$            ; BR IF NOT COMPLETED 1 PASS
4836 026744                                     EXIT           TST            ; IF DONE 1 PASS IN UNATTENDED MODE - EXIT
4837 026744 104432                TRAP     C$EXIT
4838 026746 017276                .WORD    L10017-
4839 026750 012737 000001 006570 1$: MOV      #TTL,MLTYP      ;SET UP DEFAULT FOR UNATTENDED MODE
4840 026756 000137 031734      JMP      GTR9          ; 'R M=ACT/LO=1/PAS=1/NOST/CH' AND RUN
4841
4842                                     .SBTTL         COMMAND LINE FETCH & INTERPRETATION SECTION
4843
4844 026762 105037 003147      GETCL: CLR      P$GDBD ;CLEAR CMD LINE PARSING ERROR FLAGS
4845 026766 105037 003146      CLR      P$NNUF
4846 026772                                     GMANID        CLISPM,CMDBUF,A,-1,1,72.,NO ;GET A COMMAND LINE FROM OPR.
4847 026772 104443                TPAP     C$GMAN
4848 026774 000406                BR       10000$
4849 026776 002666                .WORD    CMDBUF
4850 027000 000142                .WORD    T$CODE
4851 027002 011572                .WORD    CLISPM
4852 027004 177777                .WORD    -1
4853 027006 000001                .WORD    T$LOLIM

```

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COMMAND LINE FETCH & INTERPRETATION SECTION

```

4854 027010 000110
4855 027012
4856 027012 012737 002666 003132
4857 027020 012737 007716 003134
4858 027026 012737 027736 003136
4859 027034 005037 003012
4860 027040 004737 024244
4861 027044 105737 003147
4862 027050 001412
4863 027052
4864 027052 012746 011605
4865 027056 012746 000001
4866 027062 010600
4867 027064 104417
4868 027066 062706 000004
4869 027072 000137 026762
4870 027076 105737 003146
4871 027102 001412
4872 027104
4873 027104 012746 011635
4874 027110 012746 000001
4875 027114 010600
4876 027116 104417
4877 027120 062706 000004
4878 027124 000137 026762
4879
4880 027130 023727 003010 000060 10$: CMP KEYWD1,#SETET ;WAS 'SET EXPECT=TRANSMIT' TYPED ? REV B EC
4881 027136 001711 GETCL ;YES,BRANCH REV B EC
4882 027140 023727 003010 000005 CMP KEYWD1,#HLP ;SEE IF HELP WAS TYPED
4883 027146 001705 GETCL ;GO GET CMD AGAIN IF YES
4884 027150 023727 003010 000055 CMP KEYWD1,#PRNT ;SEE IF PRINT WAS TYPED
4885 027156 001701 GETCL ;GO GET CMD AGAIN IF YES
4886 027160 023727 003010 000004 CMP KEYWD1,#RUN ;SEE IF RUN WAS TYPED
4887 027166 001002 BNE 11$ ;BR IF NO
4888 027170 000137 031734 JMP GTR9 ;START EXEC. IF YES
4889 027174 023727 003010 000052 11$: CMP KEYWD1,#DMPS ;SEE IF DUMP WAS TYPED
4890 027202 001004 BNE 12$ ;BR IF NO
4891 027204 004737 023126 JSR PC,DUMPSR ;ELSE,DUMP PART OF MEMORY
4892 027210 000137 026762 JMP GETCL ;THEN RETURN TO GET ANOTHER CMD.
4893 027214 023727 003010 000057 12$: CMP KEYWD1,#EXIT ;EXIT ? REV B EC
4894 027222 001005 BNE 13$ ;NO BRANCH REV B EC
4895 027224 012737 000001 006562 MOV #1,DCLFLG ;SET CLEANUP FLAG REV B EC
4896 027232 EXIT TST ;GO BACK TO INIT REV B EC
4897 027232 104432
4898 027234 017010 TRAP C$EXIT
4899 .WORD L10017-.
4900 027236 023727 003010 000001 13$: CMP KEYWD1,#CLEAR ;SEE IF CLEAR WAS TYPED
4901 027244 001646 GETCL ;IF YES, BACK TO GET ANOTHER CMD.
4902 027246 023727 003010 000002 CMP KEYWD1,#SHOW ;SEE IF SHOW WAS TYPED
4903 027254 001642 GETCL ;IF YES, BACK TO GET ANOTHER CMD.
4904 027256 023727 003010 000010 4$: CMP KEYWD1,#SETEXP ;SEE IF SET EXPECTED
4905 027264 001512 BEQ 2$ ;BR IF YES (A SETEXP WAS TYPED)
4906 027266 013737 006464 006530 5$: MOV TTOTCC,TOTCC
4907 027274 023727 006530 001000 CMP TOTCC,#BUFLIM ;SEE IF BUFFER ALREADY FULL
4908 027302 002414 BLT 15$ ;BR IF NOT FULL (BUFLIM # OF CHARS.)
4909 027304 PRINTF #MSGTRN,#BUFEX ;ELSE TELL OPR. AND DON'T BUILD MSG.

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COMMAND LINE FETCH & INTERPRETATION SECTION

4910	027304	012746	014347						MOV	#BUFEX,-(SP)
4911	027310	012746	014365						MOV	#MSGTRN,-(SP)
4912	027314	012746	000002						MOV	#2,-(SP)
4913	027320	010600							MOV	SP,RO
4914	027322	104417							TRAP	C\$PNTF
4915	027324	062706	000006						ADD	#6,SP
4916	027330	000137	026762							
4917	027334	005737	006464	15\$:	JMP	GETCL				: THEN GO GET A NEW COMMAND
4918	027340	001002			TST	TTOTCC				:IF FIRST "SET" THEN GET RID OF DEFAULT
4919	027342	005037	006462		BNE	6\$				
4920	027346	012737	006150	006442	6\$:	CLR	TXMTOT			:GET POSITION OF END OF TX LIST
4921	027354	013701	006462		MOV	#PTRTAB, TXPTR				
4922	027360	020127	000017		MOV	TXMTOT, R1				
4923	027364	002414			CMP	R1, #MSGGLIM				:SEE IF MSG COUNT EXCEEDED.
4924	027366				BLT	17\$				: BR IF NO
4925	027366	012746	014307		PRINTF	#MSGTRN, #TABEX				: ELSE TELL OPR. AND DON'T BUILD MSG.
4926	027372	012746	014365						MOV	#TABEX,-(SP)
4927	027376	012746	000002						MOV	#MSGTRN,-(SP)
4928	027402	010600							MOV	#2,-(SP)
4929	027404	104417							MOV	SP,RO
4930	027406	062706	000006						TRAP	C\$PNTF
4931	027412	000137	026762						ADD	#6,SP
4932	027416	006301		17\$:	JMP	GETCL				: THEN GO GET A NEW COMMAND.
4933	027420	006301			ASL	R1				:# OF MSGS *4 = NEXT FREE PTR BLOCK
4934	027422	060137	006442		ASL	R1				
4935	027426	013737	006442	006524	ADD	R1, TXPTR				
4936	027434	013737	006466	006526	MOV	TXPTR, CPTR				:SETUP CHAR. COUNT, CURRENT ADDR, & PTR
4937	027442	004737	023264		MOV	TCURAD, CURADD				
4938	027446	004737	023362		JSR	PC, ADDCC				:ADD IN CHAR. COUNT AND CHECK TOTAL
4939	027452	013737	006524	006442	JSR	PC, BLDBUF				:GO BUILD MESSAGE IN BUFFER AND PTRS.
4940	027460	013737	006530	006464	MOV	CPTR, TXPTR				
4941	027466	013737	006526	006466	MOV	TOTCC, TTOTCC				:UPDATE CHAR. COUNT, CURR ADDR, & PTR
4942	027474	005237	006462		MOV	CURADD, TCURAD				
4943	027500	005337	003014		INC	TXMTOT				
4944	027504	001270			DEC	QUALVL				:DEC THE COPY COUNT
4945	027506	000137	026762		BNE	5\$				
4946					JMP	GETCL				
4947	027512	013737	006450	006530	2\$:	MOV	CTOTCC, TOTCC			:SETUP CHAR. COUNT, CURR. ADDR. & PTR
4948	027520	023727	006530	001000	CMP	TOTCC, #BUFLIM				:SEE IF BUFFER ALREADY FULL
4949	027526	002414			BLT	16\$				: BR IF NOT FULL (BUFLIM # OF CHARS.)
4950	027530				PRINTF	#MSGTRN, #BUFEX				: ELSE TELL OPR. AND DON'T BUILD MSG.
4951	027530	012746	014347						MOV	#BUFEX,-(SP)
4952	027534	012746	014365						MOV	#MSGTRN,-(SP)
4953	027540	012746	000002						MOV	#2,-(SP)
4954	027544	010600							MOV	SP,RO
4955	027546	104417							TRAP	C\$PNTF
4956	027550	062706	000006						ADD	#6,SP
4957	027554	000137	026762							
4958	027560	005737	006450	16\$:	JMP	GETCL				: THEN GO GET A NEW COMMAND
4959	027564	001002			TST	CTOTCC				:IF FIRST "SET" THEN GET RID OF DEFAULT
4960	027566	005037	006446		BNE	7\$				
4961	027572				CLR	CMPTOT				
4962	027572	012737	006244	006444	7\$:	MOV	#PTR13, CMPPTR			:INIT COMPARE MESSAGE POINTER
4963	027600	013701	006446		MOV	CMPTOT, R1				
4964	027604	020127	000017		CMP	R1, #MSGGLIM				:SEE IF MSG COUNT EXCEEDED.
4965	027610	002414			BLT	18\$				: BR IF NO

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4966	027612				PRINTF #MSGTRN,#TABEX		; ELSE TELL OPR. AND DON'T BUILD MSG.
4967	027612	012746	014307				MOV #TABEX,-(SP)
4968	027616	012746	014365				MOV #MSGTRN,-(SP)
4969	027622	012746	000002				MOV #2,-(SP)
4970	027626	010600					MOV SP,RO
4971	027630	104417					TRAP C\$PNTF
4972	027632	062706	000006				ADD #6,SP
4973	027636	000137	026762				
4974	027642	006301			18\$: JMP GETCL		; THEN GO GET A NEW COMMAND.
4975	027644	006301			ASL R1		;# OF MSGS *4 = NEXT FREE PTR BLOCK
4976	027646	060137	006444		ASL R1		
4977	027652	013737	006444	006524	ADD R1,CMPPTR		
4978	027660	013737	006452	006526	MOV CMPPTR,CPTR		
4979	027666	004737	023264		MOV CCURAD,CURADD		
4980	027672	004737	023362		JSR PC,ADDCC		;ADD IN XHAR. COUNT AND CHECK TOTAL
4981	027676	013737	006524	006444	JSR PC,BLDBUF		
4982	027704	005237	006446		MOV CPTR,CMPPTR		
4983	027710	013737	006526	006452	INC CMPTOT		;UPDATE CHAR. COUNT, CURR ADDR. & PTR
4984	027716	013737	006530	006450	MOV CURADD,CCURAD		
4985	027724	005337	003014		MOV TOTCC,CTOTCC		
4986	027730	001270			DEC QUALVL		;IF COPY WAS GIVEN, PUT MSG IN BUFF
4987	027732	000137	026762		BNE Z\$		; AGAIN
4988					JMP GETCL		;GO BACK UNTIL GET A 'RUN'
4989							
4990							
4991							
4992							



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5049	030104	000700	.WORD	ACTDMQ-10\$	:DUMP WORD
5050	030106	000246	.WORD	ACTPRT-10\$	:PRINT
5051	030110	001572	.WORD	ACTMOS-10\$	:MODEM STATUS
5052	030112	000236	.WORD	ACTEXT-10\$	:EXIT ROUTINE REV B EC
5053	030114	001272	.WORD	ACTSEX-10\$	:SET EX=TR REV B EC
5054					

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5055
5056 030116 112737 177777 003146 ACTNUF: MOV#-1,PSNNUF ;SET FLAG TO SAY NEED MORE OF COMMAND
5057 030124 000207 ACTNUL: RTS PC ;RETURN TO PARSER
5058
5059 030126 012737 000001 003010 ACTCLR: MOV #CLEAR,KEYWD1 ;SET LOC TO SAY A CLEAR WAS TYPED
5060 030134 000207 RTS PC
5061
5062 030136 012737 000002 003010 ACTSHO: MOV #SHOW,KEYWD1 ;SET LOC. TO SAY A SHOW WAS TYPED
5063 030144 000207 RTS PC
5064
5065 030146 012702 003016 ACTHLP: MOV #HLPTAB,R2 ;SETUP R2 AS A POINTER TO HELP MSG TABLE
5066 030152 1$: PRINTF #HLPF,(R2)+ ;PRINT HELP INFORMATION MESSAGES
5067 030152 012246 MOV (R2)+,-(SP)
5068 030154 012746 012273 MOV #HLPF,-(SP)
5069 030160 012746 000002 MOV #2,-(SP)
5070 030164 010600 MOV SP,R0
5071 030166 104417 TRAP C$PNTF
5072 030170 062706 000006 ADD #6,SP
5073 030174 020227 003036 CMP R2,#HLPEND ;SEE IF ALL INFO PRINTED YET
5074 030200 001364 BNE 1$ ;IF NO KEEP PRINTING
5075 030202 012737 000005 003010 MOV #HLP,KEYWD1 ;SET LOC. TO SAY A HELP WAS TYPED
5076 030210 000207 RTS PC
5077
5078 030212 012737 000057 003010 ACTEXT: MOV #EXIT,KEYWD1 ;EXIT COMMAND WAS INPUT REV B EC
5079 030220 000207 RTS PC ;RETURN
5080
5081 030222 012737 000055 003010 ACTPRT: MOV #PRNT,KEYWD1 ;SET LOC. TO SAY A HELP WAS TYPED
5082 030230 004737 020610 JSR PC,REPORT ;CALL ROUTINE TO PRINT EVENT LOG AND BASE TABLE
5083 030234 000207 RTS PC
5084
5085 030236 012737 000004 003010 ACTRUN: MOV #RUN,KEYWD1 ;SET RUN FLAG
5086 030244 112737 177777 003146 MOV#-1,PSNNUF ;SET FLAG TO SAY NEED MORE OF COMMAND
5087 030252 012737 000001 006576 MOV #1,RPASS ;SET DEFAULT RUN 'PASS' TO 1
5088 030260 000207 RTS PC
5089
5090 030262 012737 006244 006444 ACTCSE: MOV #PTR13,CMPPTR ;INIT COMPARE MESSAGE POINTER
5091 030270 013701 006444 MOV CMPPTR,R1
5092
5093 030274 013702 006446 MOV CMPTOT,R2
5094 030300 105037 003146 CLRB PSNNUF ;FLAG THAT HAVE VALID COMMAND AT THIS PT.
5095 030304 023727 003010 000002 CMP KEYWD1,#SHOW ;SEE IF A CLEAR OR SHOW WAS TYPED
5096 030312 001471 BEQ ACTSHW ;BR IF A SHOW WAS TYPED
5097 030314 012737 000001 006446 MOV #1,CMPTOT ;CLEAR COMPARE MESSAGE COUNT, CHAR. COUNT
5098 030322 005037 006450 CLR CTOTCC ; AND RESET POINTER
5099
5100 030326 012737 006244 006444 MOV #PTR13,CMPPTR ;INIT COMPARE MESSAGE POINTER
5101 030334 013737 006444 006524 MOV CMPPTR,CPTR ;SET UP TO FILL IN DEFAULT MESSAGE
5102 030342 012701 005150 MOV #CMPBUF,R1
5103 030346 010137 006452 MOV R1,CCURAD
5104 030352 000431 BR ACTCLB
5105
5106 030354 012701 006150 ACTCST: MOV #PTRTAB,R1
5107 030360 013702 006462 MOV #XMTOT,R2
5108 030364 105037 003146 CLRB PSNNUF ;FLAG THAT HAVE VALID COMMAND AT THIS PT.
5109 030370 023727 003010 000002 CMP KEYWD1,#SHOW ;SEE IF A CLEAR OR SHOW WAS TYPED
5110 030376 001437 BEQ ACTSHW ;BR IF A SHOW WAS TYPED

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5111 030400 012737 000001 006462      MOV      #1, TXMTOT      ;CLEAR TRANSMIT MESSAGE COUNT, CHAR. COUNT
5112 030406 005037 006464      CLR      TTOTCC          ; AND RESET POINTER
5113 030412 012737 006150 006442      MOV      #PTRTAB, TXPTR
5114 030420 013737 006442 006524      MOV      TXPTR, CPTR
5115 030426 012701 003150      MOV      #TXBUF, R1
5116 030432 010137 006466      MOV      R1, TCURAD
5117
5118 030436 012702 001000      ACTCLB: MOV      #BUFLIM, R2
5119 030442 010137 006526      MOV      R1, CURADC      ;SET UP TO PUT DEFAULT MSG IN LIST AFTER 033'S
5120 030446 012737 000005 006516      MOV      #5, MSGTYP
5121 030454 013737 002162 006520      MOV      MSG5C, CURCC
5122 030462 105021      1$:      CLR      (R1)+          ;FILL EXPT OR TRAN BUFFER WITH 0'S IF A CLEAR
5123 030464 005302      DEC      R2              ;DO 'BUFLIM' NUMBER OF BYTE LOCATIONS
5124 030466 001375      BNE      R2
5125 030470 004737 023362      JSR      PC, BLDBUF      ;'CLEAR' REALLY MEANS TO PUT DEFAULT MSG IN
5126 030474 000207      RTS      PC              ;WHEN DONE, RETURN TO PARSER
5127
5128
5129 030476 012705 003072      ACTSHW: MOV      #SHTAB, R5
5130 030502 122571 000000      5$:      CMPB     (R5)+, @ (R1)   ;LOOK AT FIRST BYTE OF MSG TO DECIPHER TYPE
5131 030506 001404      BEQ      6$
5132 030510 020527 003101      CMP      R5, #SHTEND    ;SEE IF LOOKED AT ALL OF DEFAULTS YET
5133 030514 001372      BNE      5$
5134 030516 005205      INC      R5              ;MUST BE OPR. SPEC'D THEN
5135 030520 162705 003073      6$:      SUB      #SHTAB+1, R5
5136 030524 006305      ASL      R5
5137 030526 016137 000002 006534      MOV      2(R1), TEMP
5138 030534      PRINTF #SHMSG, SHTYTB(R5), TEMP ;PRINT MSG SIZE & TYPE
5139 030534 013746 006534      MOV      TEMP, -(SP)
5140 030540 016546 003052      MOV      SHTYTB(R5), -(SP)
5141 030544 012746 013507      MOV      #SHMSG, -(SF)
5142 030550 012746 000003      MOV      #3, -(SP)
5143 030554 010600      MOV      SP, R0
5144 030556 104417      TRAP    C$PNTF
5145 030560 062706 000010      ADD      #10, SP
5146 030564 062701 000004      ADD      #4, R1          ;BUMP R1 TO NEXT SET OF POINTERS
5147 030570 005302      DEC      R2
5148 030572 001341      BNE      ACTSHW
5149 030574 013737 006566 007706      MOV      MODTYP, DEV1
5150 030602 013737 006570 007710      MOV      MLTYP, DEV2
5151 030610 013737 006576 007712      MOV      RPASS, DEV3
5152 030616 013737 006574 007714      MOV      PARAM, DEV4
5153 030624 004737 023712      JSR      PC, SHWOP      ;SHOW THE OPERATOR THE CURRENT MODE..... ALSO
5154 030630 000207      RTS      PC
5155
5156 030632 013737 003142 006510      ACTDMS: MOV      P$NUM, STADD ;SETUP STARTING ADDRESS FOR DUMP
5157 030640 005037 006514      CLR      BYTBIT          ;SET DEFAULT OF WORD DUMP
5158 030644 012737 000052 003010      MOV      #DMPS, KEYWD1 ;FLAG THAT A DUMP WAS TYPED
5159 030652 000403      BR      ACTDME
5160
5161 030654 012737 177777 006514      ACTDMQ: MOV      #-1, BYTBIT ;SET DUMP FLAG TO 'DUMP-WORD'
5162 030662 013737 003142 006512      ACTDME: MOV      P$NUM, ENADD ;SETUP END ADDRESS FOR DUMP (=START, IF NO 'EEE'
5163 030670 105037 003146      ACTDMX: CLR      P$NUF   ;CLEAR NOT-ENOUGH FLAG, 'DUMP N-N/B' IS VALID
5164 030674 000207      RTS      PC
5165

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5166
5167
5168 030676 012737 000010 003010 ACTSTE: MOV #SETEXP,KEYWD1
5169 030704 000403 BR ACTSTX
5170
5171 030706 012737 000011 003010 ACTSTT: MOV #SETTRN,KEYWD1
5172 030714 012737 000001 003014 ACTSTX: MOV #1,QUALVL ;SET UP DEFAULT COPY TO 1 (/COPY=0)
5173 030722 000207 RTS PC
5174
5175 030724 012737 000012 003012 ACTSIZE: MOV #SIZE,QUALFG
5176 030732 000207 RTS PC
5177
5178 030734 012737 000013 003012 ACTCOP: MOV #QCOPY,QUALFG
5179 030742 000207 RTS PC
5180
5181 030744 023727 003012 000012 ACTNUM: CMP QUALFG,#SIZE ;SEE IF A SIZE OR COPY TYPED
5182 030752 001023 BNE 1$ ;BR IF IT WAS A COPY
5183 030754 005737 003142 TST P$NUM ;CHECK TO BE SURE DIDN'T TRY SIZE=0
5184 030760 001014 BNE 3$ ; BR IF NO
5185 030762 PRINTF #CLISEO
5186 030762 012746 012074 MOV #CLISEO,-(SP)
5187 030766 012746 000001 MOV #1,-(SP)
5188 030772 010600 MOV SP,R0
5189 030774 104417 TRAP C$PNTF
5190 030776 062706 000004 ADD #4,SP
5191 031002 112737 177777 003147 MOVB #-1,P$GJBD ;SEE ERROR-IN-CMD FLAG
5192 031010 000411 BR 2$
5193 031012 013737 003142 006520 3$: MOV P$NUM,CURCC ;IF A SIZE LOAD CURCC WITH BYTE COUNT
5194 031020 000405 BR 2$
5195 031022 013737 003142 003014 1$: MOV P$NUM,QUALVL ;IF A COPY, LOAD COPY COUNT
5196 031030 005237 003014 INC QUALVL ;INCREMENT SO FIRST DEC MAKES IT REAL #
5197 031034 000522 2$: BR ACTMEX
5198
5199 031036 012737 000007 006516 ACTOPM: MOV #7,MSGTYP
5200 031044 010437 006534 MOV R4,TEMP ;KEEP TRACK OF START OF QUOTED TEXT
5201 031050 005237 006534 INC TEMP ; SO CAN CALC OPCNT AT END OF QUOTES
5202 031054 000207 RTS PC
5203
5204 031056 010402 ACTEQO: MOV R4,R2
5205 031060 163702 006534 SUB TEMP,R2
5206 031064 010237 006520 MOV R2,CURCC ;CALC BYTE COUNT FOR QUOTED TEXT
5207 031070 010237 002166 MOV R2,OPCNT
5208 031074 013701 006534 MOV TEMP,R1
5209 031100 012705 002520 MOV #OPBUF,R5
5210 031104 112125 1$: MOVB (R1)+,(R5)+ ;COPY QUOTED TEXT TO OPBUF
5211 031106 005302 DEC R2
5212 031110 001375 BNE 1$
5213 031112 000473 BR ACTMEX
5214
5215 031114 ACTBCR: PRINTF #CLIBCR ;BAD CHAR. IN OPR. QUOTED STRING
5216 031114 012746 012027 MOV #CLIBCR,-(SP)
5217 031120 012746 000001 MOV #1,-(SP)
5218 031124 010600 MOV SP,R0
5219 031126 104417 TRAP C$PNTF
5220 031130 062706 000004 ADD #4,SP
5221 031134 000207 RTS PC

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5222
5223 031136 005037 006516      ACTMS0: CLR      MSGTYP
5224 031142 000435              BR      ACTME1
5225 031144 012737 000001 006516 ACTMS1: MOV      #1,MSGTYP      ;SET MESSAGE TYPE = ALL ONES
5226 031152 000431              BR      ACTME1
5227 031154 012737 000002 006516 ACTMS2: MOV      #2,MSGTYP      ;SET MESSAGE TYPE = ONES & ZEROS
5228 031162 000425              BR      ACTME1
5229 031164 012737 000003 006516 ACTMS3: MOV      #3,MSGTYP      ;SET MESSAGE TYPE = ZEROS & ONES
5230 031172 000421              BR      ACTME1
5231 031174 012737 000004 006516 ACTMS4: MOV      #4,MSGTYP      ;SET MESSAGE TYPE = CCITT
5232 031202 000415              BR      ACTME1
5233 031204 012737 000005 006516 ACTMS5: MOV      #5,MSGTYP      ;SET MESS TYPE = QUICK FOX
5234 031212 013737 002162 006520      MOV      MSG5C,CURCC      ;SETUP DEFAULT SIZE FOR THIS TYPE
5235 031220 000430              BR      ACTMEX
5236 031222 012737 000006 006516 ACTMS6: MOV      #6,MSGTYP      ;SET MESSAGE TYPE = ALPHA/NUM
5237 031230 013737 002164 006520      MOV      MSG6C,CURCC      ;SETUP DEFAULT SIZE FOR THIS TYPE
5238
5239 031236 012737 000100 006520 ACTME1: MOV      #64,,CURCC      ;SETUP DEFAULT SIZE FOR MSG0-4
5240 031244 000416              BR      ACTMEX      ;BRANCH TO EXIT
5241
5242
5243 031246 022737 000010 003010 ACTSEX: ;REV B EC
5244 031254 001404              CMP      #SETEXP,KEYWD1      ;DID WE GET HERE FROM 'SET E='COMMAND?
5245 031256 112737 000001 003147      BEQ      10$                ;YES,BRANCH
5246 031264 000406              MOV8     #1,P$GDBD          ;SET ERROR FLAG
5247 031266 004737 023506              BR      ACTMEX              ;GO EXIT SUBROUTINE
5248 031272 012737 000060 003010 10$: JSR      PC,FACSIMILE      ;GO COPY TRANSMIT LIST TO EXPECT LIST
5249 031300 000400              MOV      #SETET,KEYWD1      ;SET FLAG TO BE USED IN T1::
5250                                BR      ACTMEX              ;EXIT SUBROUTINE
5251 031302 105037 003146      ACTMEX: CLR8     P$NNUF      ;CLEAR NOT-ENOUGH FLAG
5252 031306 000207              RTS      PC
5253

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5281	031424	012737	000036	003012	ACTNO:	MOV	#NO,QUALFG		
5282	031432	000207				RTS	PC		
5283									
5284	031434	022737	000036	003012	ACTECH:	CMP	#NO,QUALFG		
5285	031442	001422				BEQ	1\$		
5286	031444	052737	000004	006574		BIS	#ECHOB,PARAM		
5287	031452	022737	000002	006566		CMP	#PAS,MODTYP		
5288	031460	001416				BEQ	2\$		;BE SURE IN PASSIVE MODE IF
5289	031462					PRINTF	#CLINPS		;IF TRYING TO SET /ECHO
5290	031462	012746	011764						
5291	031466	012746	000001						MOV #CLINPS, -(SP)
5292	031472	010600							MOV #1, -(SP)
5293	031474	104417							MOV SP, R0
5294	031476	062706	000004						TRAP C\$PNTF
5295	031502	112737	177777	003147		MOVB	#-1, P\$GDBD		ADD #4, SP
5296	031510	042737	000004	006574	1\$:	BIC	#ECHOB,PARAM		
5297	031516	005037	003012		2\$:	CLR	QUALFG		
5298	031522	000501				BR	ACTLXX		;CLEAR 'NO' OUT OF QUALIFIER FLAG
5299									
5300	031524	012701	000002		ACTCHK:	MOV	#DATCKB, R1		;SET DATA CHECK BIT
5301	031530	000413				BR	ACTQFG		
5302									
5303	031532	012701	000001		ACTSTS:	MOV	#STATB, R1		;SET THE STATUS BIT
5304	031536	000410				BR	ACTQFG		
5305									
5306	031540	012701	000020		ACTCRC:	MOV	#CRCB, R1		;SET THE CRC BIT
5307	031544	000405				BR	ACTQFG		
5308									
5309	031546	012701	000010		ACTMOS:	MOV	#MOCHK, R1		;SET THE MODEM BIT
5310	031552	000402				BR	ACTQFG		
5311									
5312	031554	012701	000040		ACTPRO:	MOV	#PROTOB, R1		;SET THE PROTOCOL BIT
5313									
5314	031560	050137	006574		ACTQFG:	BIS	R1, PARAM		
5315	031564	022737	000036	003012		CMP	#NO,QUALFG		
5316	031572	001002				BNE	1\$		
5317	031574	040137	006574			BIC	R1, PARAM		
5318	031600	005037	003012		1\$:	CLR	QUALFG		;CLEAR 'NO' OUT OF QUALIFIER FLAG
5319	031604	000450				BR	ACTLXX		
5320									
5321	031606	013737	003142	006576	ACTRPS:	MOV	P\$NUM, RPASS		;GET NUMBER OF 'RUN PASSES'
5322	031614	000444				BR	ACTLXX		
5323									
5324	031616	012737	000005	006570	ACTMOP:	MOV	#5, MLTYP		
5325	031624	000417				BR	ACTLPX		
5326	031626	012737	000001	006570	ACTTLP:	MOV	#1, MLTYP		
5327	031634	000413				BR	ACTLPX		
5328	031636	012737	000002	006570	ACTCLP:	MOV	#2, MLTYP		
5329	031644	000407				BR	ACTLPX		
5330	031646	012737	000003	006570	ACTLLP:	MOV	#3, MLTYP		
5331	031654	000403				BR	ACTLPX		
5332	031656	012737	000004	006570	ACTRLP:	MOV	#4, MLTYP		
5333									
5334	031664	022737	000003	006566	ACTLPX:	CMP	#ACT, MODTYP		;BE SURE IN ACTIVE IF TRYING TO SET LOOP
5335	031672	001415				BEG	ACTLXX		; BR IF IN ACTIVE
5336	031674	112737	177777	003147		MOVB	#-1, P\$GDBD		

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ACTION TABLE AND ROUTINES

5337	031702	005037	006570	CLR	MLTYP				
5338	031706			PRINTF	#CLIBDL				
5339	031706	012746	011722						
5340	031712	012746	000001					MOV	#CLIBDL, -(SP)
5341	031716	010600						MOV	#1, -(SP)
5342	031720	104417						MOV	SP, R0
5343	031722	062706	000004					TRAP	C\$PNTF
5344	031726	105037	003146					ADD	#4, SP
5345	031732	000207		ACTLXX:	CLRB	P\$NNUF			
5346					RTS	PC			

;CLEAR ANY LOOP TYPE THAT MAY HAVE GOT SET

;CLEAR NOT-ENOUGH FLAG

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ACTION TABLE AND ROUTINES

```

5347
5348
5349 031734 005737 006570      ;REV B BY EC
5350 031740 001422      GTR9:  TST      MLTYP      ;LOOP MODE ?
5351 031742 032737 000002 006574      BEQ      10$      ;NO BRANCH
5352 031750 001416      BIT      #DATCKB,PARAM ;DATA CHECK ?
5353 031752 001416      BEQ      10$      ;NO BRANCH
5354 031760 023737 006446 006462      CMP      CMPTOT, TXMTOT ;TX = EX ?
5355 031762 001412      BEQ      10$      ;YES BRANCH
5356 031762 012746 012125      PRINTF  #CLIPW      ;PRINT WARNING
5357 031766 012746 000001      MOV      #CLIPW, -(SP)
5358 031772 010600      MOV      #1, -(SP)
5359 031774 104417      MOV      SP, R0
5360 031776 062706 000004      TRAP    C$PNTF
5361 032002 000137 026762      ADD      #4, SP
5362
5363
5364      ; RX ALLOCATE CODE
5365 032006 012737 006150 006442 10$:  MOV      #PTRTAB, TXPTR ;INIT TRANSMIT MESSAGE POINTER
5366 032014 012737 006244 006444      MOV      #PTR13, CMPTR  ;INIT COMPARE MESSAGE POINTER
5367 032022 012737 006340 006440      MOV      #PTR23, RXPTR  ;INIT RECEIVE MESSAGE POINTER
5368
5369 032030 013737 006446 006476      MOV      CMPTOT, RXMTOT ;MAKE COMPARE AND RX MESSAGE COUNTS EQUAL
5370
5371
5372 032036 005037 006600      GTREX: CLR      FLAG      ;CLEAR FLAG
5373 032042 005037 006502      CLR      OPVAR      ;CLEAR OPTIONAL VARIABLE COUNTER
5374 032046 005037 006504      CLR      PSCNT      ;CLEAR PASS COUNT
5375 032052 005037 006506      CLR      ERRCNT      ;CLEAR ERROR COUNT
5376 032056 005037 011520      CLR      MGLCNT      ;CLEAR GLITCH COUNT
5377 032062 005037 011522      CLR      MHRCNT      ;CLEAR HARD ERR. COUNT
5378 032066 005037 006500      CLR      LNCNT      ;CLEAR LINE COUNTER
5379 032072 012737 000626 011510      MOV      #626, SYNCW   ;SET UP SYNCW FOR 226 SYNC +TSOM
5380 032100 052737 000200 011472      BIS      #BIT7, DPVP1  ;SET UP PARAM WORD FOR 226 RX SYNC
5381 032106 005737 011524      TST      RNODE
5382 032112 001406      BEQ      1$          ;IF NON ITEP GO TO 1
5383 032114 042737 000200 011472      BIC      #BIT7, DPVP1 ;SET UP FOR 26 SYNC WORD ON RX.
5384 032122 012737 000426 011510      MOV      #426, SYNCW  ;ELSE SET UP SYNC FOR 26 AND TSOM
5385 032130 004737 020176      1$:  JSR      PC, LOGDVI  ;LOG ABOUT TO INIT DEVICE
5386 032134 004737 034304      JSR      PC, DVINIT  ;INIT DEVICE
5387
5388 032140 012737 001000 006520      GTRX2: MOV      #BUFLIM, CURCC ;SET CHAR COUNT TO 'BUFLIM' NO. OF BYTES
5389 032146 012737 004150 006526      MOV      #RXBUF, CURADD ;SET UP RX BUFFER AS CURRENT ADD.
5390 032154 013737 006440 006524      MOV      RXPTR, CPTR
5391 032162 012737 000010 006516      MOV      #10, MSGTYP  ;SET UP FOR 33 TO FILL RX BUFFERS
5392 032170 004737 023362      JSR      PC, BLDBUF  ;CLEAR RX BUFFER
5393 032174 013702 006566      MOV      MODTYP, R2
5394 032200 006302      ASL      R2
5395 032202 000172 006602      JMP      @MODE(R2)   ;MODE DISPATCH
5396

```

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RECEIVE MODE SECTION

```

5397 .SBTTL          RECEIVE MODE SECTION
5398 :++
5399 : FUNCTIONAL DESCRIPTION:
5400 : RECEIVE-ONLY (OR ONE-WAY-IN) ROUTINE
5401 : IN THIS MODE OF TESTING THE DEVICE'S RECEIVER IS ENABLED IN EXPECTATION
5402 : OF RECEIVING A MESSAGE. AFTER RECEIVING AN 'EXPECTED' NUMBER OF
5403 : MESSAGES, THE DATA RECEIVED CAN BE COMPARED AGAINST A LIST OF 'EXPECT
5404 : TO RECEIVE' MESSAGES IF DATA-CHECKING IS ENABLED.
5405 :
5406 : SUBORDINATE ROUTINES USED:
5407 :         'ALLTR'
5408 :
5409 : CALLING SEQUENCE:
5410 :         JMP      @MODE(R2)          ;DISPATCH TO MODE BASED ON MODE TYPE IN R2
5411 :
5412 :
5413 : RXONLY:
5414 : RXON2:  MOV      RXPTR,CPTRR
5415 :         MOV      RXMTOT,DVRCT      ;SET UP MESSAGE COUNT
5416 :         BIS      #QRX+#ERX,FLAG   ;SET UP RX QUE
5417 :         CLR      CPTR              ;CLEAR THE TX POINTER
5418 :         JMP      ALLTR             ;GO RX.
5419
032206
032206 013737 006440 006522
032214 013737 006476 006474
032222 052737 000104 006600
032230 005037 006524
032234 000137 032376

```

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TRANSMIT MODE SECTION

.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
:--

```

5420								
5421								
5422								
5423								
5424								
5425								
5426								
5427								
5428								
5429								
5430								
5431								
5432								
5433								
5434								
5435								
5436	032240	042737	000002	006574	TXONLY:	BIC	#DATCKB,PARAM	;SET NOCHECK
5437	032246	013737	006442	006524	TXOM2:	MOV	TXPTR,CPTR	
5438	032254	013737	006462	006460		MOV	TXMTOI,DVTCT	;COPY COUNTER FOR THIS PASS
5439	032262	052737	000210	006600		BIS	#QTX+#ETX,FLAG	;SET THE QUE TX FLAG
5440	032270	005037	006522			CLR	CPTRR	;CLEAR RX POINTER
5441	032274	000137	032376			JMP	ALLTR	;GO TX.

CVCLHC DPV-11 DATA COMM. LINK TEST  
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PASSIVE MODE SECTION

5442  
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5461  
5462  
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5465  
5466

.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

```

```

:--
: PLCK:

```

```

: PLCK2: MOV TXMTOT,DVTCT ;SET UP THE TRANSMIT COUNT
: MOV TXPTR,CPTR ;SET UP CPTR TO TRANSMIT POINTER
: PLCK3: MOV RXPTR,CPTRR ;SET UP CPTRR TO REC POINTER
: BIS #QRX+#ERX,FLAG ;SET UP Q AND EXPECT RX
: JMP ALLTR ;AND GO RX FIRST MSG.

```

```

032300
032300 013737 006462 006460
032306 013737 006442 006524
032314 013737 006440 006522
032322 052737 000104 006600
032330 000137 032376

```

CVCLHC DPV-11 DATA COMM. LINK TEST  
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ACTIVE MODE SECTION

.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

```

```

5467
5468
5469
5470
5471
5472
5473
5474
5475
5476
5477
5478
5479
5480
5481
5482
5483
5484
5485
5486 032334 013737 006462 006460
5487 032342 013737 006442 006524
5488 032350 013737 006476 006474
5489 032356 013737 006440 006522
5490 032364 052737 000314 006600
5491 032372 000137 032376
5492
5493
5494

```

```

ALCK: MOV TXMTOT,DVTCT
      MOV TXPTR,CPTR ;SET UP TX COUNTS
      MOV RXMTOT,DVRCT ;SET UP COUNTS
      MOV RXPTR,CPTRR
      BIS #QRX+#QTX+#ETX+#ERX,FLAG
      JMP ALLTR

```

CVCLHC DPV-11 DATA COMM. LINK TEST  
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TRANSMIT - RECEIVE FOR ALL STANDARD MODES

```

5495 .SBTTL TRANSMIT - RECEIVE FOR ALL STANDARD MODES
5496
5497
5498 :++
5499 : FUNCTIONAL DESCRIPTION:
5500 : THIS CODE PERFORMS THE FOLLOWING FUNCTIONS
5501 : 1.) IF RX BUFFERS ARE TO BE QUED, TELL DEVICE
5502 : CODE TO QUE THEM, LOG RECEIVE QUED.
5503 : 2.) IF TX BUFFERS ARE TO BE QUED, TELL DEVICE
5504 : CODE TO QUE THEM, LOG TRANSMIT QUED.
5505 : 3.) WAIT FOR EITHER RECEIVE BUFFER OR TRANSMIT BUFFER OR
5506 : BOTH TO COMPLETE
5507 : 4.) IF RECEIVE COMPLETE LOG IT UPDATE RX TABLE IF DATA
5508 : CHECKING.
5509 : 5.) IF TRANSMIT COMPLETE LOG IT.
5510 : 6.) WHEN BOTH TRANSMIT AND RECEIVE LISTS ARE DONE
5511 : GO TO THE COMPARE BUFFER CODE
5512
5513 : SUBORDINATE ROUTINES USED:
5514 : 'DVRXQ' -QUE RECEIVE BUFFER SPACE TO DEVICE
5515 : 'LOGRXQ' -LOG RECEIVE BUFFER SPACE TO EVENT LOG
5516 : 'LOGTXQ' -LOG TRANSMIT BUFFER QUED TO EVENT LOG
5517 : 'DVTXRX' -QUE TRANSMIT BUFFER AND WAIT FOR RX
5518 : OR TX TO COMPLETE
5519 : 'LOGRXC' -LOG RECEIVE BUFFER COMPLETED TO EVENT LOG
5520 : 'LOGTXC' -LOG TRANSMIT BUFFER COMPLETED TO EVENT LOG
5521
5522 : USE OF FLAG BITS:
5523 : QRX - SET ON INPUT TO ALLTR IF REC IS TO BE QUED TO
5524 : DEVICE. CLEARED BY DVRXQ AND THEN SET BY DVTXRX
5525 : WHEN RX BUFFER IS COMPLETED.
5526 : QTX - SET ON INPUT TO ALLTR IF TRANSMIT IS TO BE QUED TO
5527 : DEVICE. CLEARED ON ENTRY TO DVTXRX AND SET BY DVTXRX
5528 : WHEN TX BUFFER IS COMPLETED.
5529 : ETX - USED BY DVTXRX TO DETERMINE IF TX BUFFER COMPLETED IS
5530 : EXPECTED.
5531 : ERX - USED BY DVTXRX TO DETERMINE IF RX BUFFER COMPLETED IS
5532 : EXPECTED.
5533
5534 : CALLING SEQUENCE:
5535 : JMP ALLTR ;GO TO TRANSMIT-RECEIVE FOR ALL STANDARD MODES
5536 :--
5537
5538
5539 032376 ALLTR:
5540 032376 032737 000004 006600 ALCK5: BIT #QRX, FLAG
5541 032404 001424 BEQ ALCK1 ;IF NOT RX GO TO TX'S
5542 032406 013702 006522 MOV CPTRR, R2
5543 032412 011237 006540 MOV (R2), TEMP2
5544 032416 012237 006470 MOV (R2)+, DVRXA
5545 032422 011237 006542 MOV (R2), TEMP3
5546 032426 011237 006472 MOV (R2), DVRCC
5547 032432 010237 006522 MOV R2, CPTRR
5548 032436 004737 020132 JSR PC, LOGRXQ ;LOG REC QUED
5549 032442 032737 000040 006574 10$: BIT #PROTOB, PARAM ;:/PROTOCOL/?
5550 032450 001002 BNE ALCK1 ;YES, BRANCH

```

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TRANSMIT - RECEIVE FOR ALL STANDARD MODES

```

5551 032452 004737 035166          JSR    PC,DVRXQ          ;GO QUE RX BUFFERS & ENABLE RX
5552 032456 032737 000010 006600  ALCK1:  BIT    #QTX,FLAG
5553 032464 001416                   BEQ    ALCK2             ;IF NO TX'S GO TO 2
5554 032466 013702 006524          MOV    CPTR,R2
5555 032472 011227 006540          MOV    (R2),TEMP2
5556 032476 012237 006454          MOV    (R2)+,DVTXA
5557 032502 011237 006542          MOV    (R2),TEMP3
5558 032506 012237 006456          MOV    (R2)+,DVTCC
5559 032512 010237 006524          MOV    R2,CPTR
5560 032516 004737 020076          JSR    PC,LOGTXQ
5561
5562 032522 032737 000040 006574  ALCK2:  BIT    #PROTOB,PARAM ;'/PROTOCOL'?
5563 032530 001410                   BEQ    10$              ;NO,BRANCH
5564 032532 004737 040702          CALL  PROTOCOL          ;GO DO DDCMP MESSAGE PROCESSING
5565 032536 032737 000200 006574  BIT    #ABORT,PARAM     ;PROTOCOL ABORT?
5566 032544 001404                   BEQ    20$              ;NO,BRANCH
5567 032546 000137 026642          JMP    GTRA5            ;ABORT!!AND RETURN TO 'DCLT>' PROMPT
5568
5569 032552 004737 035270          10$:   JSR    PC,DVTXRX   ;GO TO TX AND RX SUB ROUT.
5570
5571 032556 032737 000004 006600  20$:   BIT    #QRX,FLAG      ;CHECK FOR REC. MSG.
5572 032564 001514                   BEQ    ALCK3
5573 032566 013737 006470 006540  MOV    DVRXA,TEMP2
5574 032574 013737 006472 006542  MOV    DVRCC,TEMP3
5575 032602 004737 020150          JSR    PC,LOGRXC       ;LOG REC COMPLETE
5576 032606 032737 000004 006574  UPTABL: BIT    #ECHOB,PARAM ;IS THIS ECHO MODE(PASSIVE)
5577 032614 001406                   BEQ    UPTA4           ;IF NOT GO TO 4
5578 032616 013702 006524          MOV    CPTR,R2        ;ELSE SET R2 TO PRESENT TX TABL
5579 032622 013722 006540          MOV    TEMP2,(R2)+   ;STORE OFF RX ADD
5580 032626 013712 006542          MOV    TEMP3,(R2)   ;AND CC
5581 032632 032737 000002 006574  UPTA4: BIT    #DATCKB,PARAM ;IS DATA CHECKING ASKED FOR
5582 032640 001015                   BNE    UPTA1          ;IF SO GO TO 1
5583 032642 012737 000001 006474  MOV    #01,DVRCT     ;ELSE SET DVRCT TO A 1
5584 032650 013737 006440 006522  MOV    RXPTR,CPTRR   ;RESET POINTER
5585 032656 022737 000003 006566  CMP    #ACT,MODTYP   ;IS THIS ACTIVE
5586 032664 001002                   BNE    UPTA3
5587 032666 005237 006474          INC    DVRCT          ;IF YES BUMP COUNT
5588 032672 000424          UPTA3: BR     UPTEX
5589 032674 013702 006522          UPTA1: MOV    CPTRR,R2
5590 032700 011237 006534          MOV    (R2),TEMP     ;LOAD TEMP WITH PREV. COUNT
5591 032704 163737 006542 006534  SUB    TEMP3,TEMP    ;LOAD TEMP WITH PREV.COUNT-CURRENT
5592 032712 013722 006542          MOV    TEMP3,(R2)+
5593 032716 063737 006542 006540  ADD    TEMP3,TEMP2
5594 032724 013722 006540          MOV    TEMP2,(R2)+  ;STORE OF NEW ADD
5595 032730 013712 006534          MOV    TEMP,(R2)    ;AND NEW CC
5596 032734 162702 000002          SUB    #2,R2        ;PUT POINTER BACK TO ADDR.
5597
5598 032740 010237 006522          MOV    R2,CPTRR     ;AND RESTORE IT.
5599
5600 032744          UPTEX:
5601 032744 022737 000002 006566  CMP    #PAS,MODTYP
5602 032752 001007                   BNE    ALCK2A         ;IF NOT PASSIVE LOOP THEN GO TO 2A
5603 032754 042737 000104 006600  BIC    #QRX+#ERX,FLAG ;CLEAR BOTH EXPECTED AND COMPLETED FLAGS
5604 032762 052737 000210 006600  BIS    #QTX+#ETX,FLAG ;SET THE TX FLAGS
5605 032770 000632                   BR     ALCK1
5606

```



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DATA COMPARISON CODE

.SBTTL DATA COMPARISON CODE

++  
FUNCTIONAL DESCRIPTION:

CMPSR - COMPARE CODE  
THIS CODE COMPARES THE RECEIVED DATA AGAINST THE  
EXPECTED AND FILLS THE EVENT LOG WITH 1 OF 3 MSGS.

NOTE: IF NO DATA CHECKING SKIP THIS CODE

- 1.) A DATA COMPARISON ENTRY WHICH REPORTS THE NUMBER  
OF COMPARISON ERRORS FOUND.
  - 2.) A DATA COMPARISON ENTRY WHICH REPORTS DIFFERENCES  
IN REC LENGTH TO COMPARE LENGTH.
  - 3.) A DATA COMPARISON STARTED ENTRY WHICH REPORTS ADDRESS  
OF RECEIVE BUFFER AND BYTE COUNT.
- THIS CODE ALSO REPORTS SOFT ERRORS FOR DATA COMPARISON  
(THE FIRST 5 ONLY), LENGTH ERROR, AND TOTAL NUMBER OF ERRORS

SUBORDINATE ROUTINES USED:

'LOGCMP' - SEE ITEM 3 ABOVE  
'LOGCML' - SEE ITEM 2 ABOVE  
'LOGCMD' - SEE ITEM 1 ABOVE

CALLING SEQUENCE:

JMP CMPSR ;JUMP TO DATA COMPARISON CODE

```

5674 033164 032737 000002 006574 CMPSR: BIT #DATCKB,PARAM ;IS DATA CHECKING TO BE DONE
5675 033172 001522 BEQ CMPSEX ;IF NOT THEN EXIT
5676 033174 013737 006440 006524 MOV RXPTR,CPTR ;PUT START OF RX POINTERS TO CPTR
5677 033202 013737 006444 006522 MOV CMPPTR,CPTRR ; AND START OF COMPARE POINTS TO CPTRR
5678 033210 013737 006476 006474 MOV RXMTOT,DVRCT
5679
5680 033216 CMPS3:
5681 033216 013702 006524 MOV CPTR,R2 ;MOVE CURRET RX PT. TO R2
5682 033222 011237 006540 MOV (R2),TEMP2 ;MOVE RX ADD TO EVENT LOG
5683 033226 012201 MOV (R2)+,R1 ;SET R1 TO START ADD OF RX
5684 033230 012237 006542 MOV (R2)+,TEMP3 ;SET CHAR COUNT TO EVENT LOG
5685 033234 010237 006524 MOV R2,CPTR ;RESTORE RX POINT
5686
5687 033240 013702 006522 MOV CPTRR,R2 ;PUT R2 AT COMPARE TABLE
5688 033244 012203 MOV (R2)+,R3 ;SET R3 TO COMPARE ADD
5689 033246 012204 MOV (R2)+,R4 ;SET R4 TO COMP CC
5690 033250 010237 006522 MOV R2,CPTRR ;RESTORE POINTER
5691 033254 010437 006544 MOV R4,TEMP4
5692 033260 004737 020244 JSR PC,LOGCMP ;LOG COMPARE START.
5693
5694 033264 020437 006542 CMP R4,TEMP3 ;IS COMPARE COUNT = TO RX COUNT
5695 033270 001410 BEQ CMPS7 ;IF SO GO TO 7
5696 033272 005237 006506 INC ERRCNT
5697 033276 ERRSOFT 1,EDDL,ERR10 ;PRINT ERROR

```



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MODEM CHANGE REPORTS

.SBTTL MODEM CHANGE REPORTS

```

:++
: FUNCTIONAL DESCRIPTION:
: THIS SECTION REPORTS THE NUMBER OF MODEM STATUS CHANGES
: THAT OCCUR ON EACH PASS. THE ERROR IS ONLY REPORTED IF
: THERE WERE ANY CHANGES IN OTHER WORDS A COUNT OF ZERO IS
: NOT REPORTED. THE CHANGES ARE REPORTED IN TWO CLASSES ..
: HARD ERRORS AND GLITCHES. HARD ERRORS ARE WHEN THE DEVICE
: IS ABLE TO LATCH UP THE BAD MODEM STATUS. GLITCHES OCCUR
: WHEN THE MODEM STATUS CHANGES TO CAUSE A DATA SET CHANGE
: INTERRUPT BUT THE CHANGE DOES NOT OCCUR LONG ENOUGH FOR
: THE DEVICE TO LATCH THE DATA

```

```

INPUTS:
'MGLCNT' - CONTAINS NUMBER OF GLITCH ERRORS
'MHRCNT' - CONTAINS NUMBER OF HARD ERRORS

```

```

OUTPUTS:
'MGLCNT' -ZEROED BY THIS SECTION
'MHRCNT' -ZEROED BY THIS SECTION

```

```

:--
CMPSEX: TST MGLCNT ;CHECK FOR ANY GLITCH ERRORS
BNE MCREP ;IF NON ZERO REPORT THEM
TST MHRCNT ;CHECK FOR ANY HARD ERRORS
BEQ ENDPS ;IF NONE GO TO END OF PASS

```

```

:REPORT ANY MODEM ERRORS HERE

```

```

MCREP: INC ERRCNT ;BUMP ERROR COUNT
ERRSOFT 4, MSCMS, ERR4

```

```

TRAP CSERSOFT
.WORD 4
.WORD MSCMS
.WORD ERR4

```

```

CLR MGLCNT ;CLEAR GLITCH COUNT
CLR MHRCNT ;CLEAR THE HARD COUNT

```

```

5738
5739
5740
5741
5742
5743
5744
5745
5746
5747
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5763 033440 005737 011520
5764 033444 001003
5765 033446 005737 011522
5766 033452 001412
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5769
5770 033454 005237 006506
5771 033460
5772 033460 104457
5773 033462 000004
5774 033464 014756
5775 033466 017602
5776 033470 005037 011520
5777 033474 005037 011522
5778

```

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INTERNAL END OF PASS CODE

.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 ROUTINES USED:

-----  
"LOGEOP" - LOG END OF PASS TO EVENT LOG

```

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5795
5796 033500 005237 006504      ENDPS:  INC      PSCNT      ;BUMP PASS COUNT
5797
5798 033504 013737 006502 006544      MOV      OPVAR,TEMP4
5799 033512 013737 006504 006540      MOV      PSCNT,TEMP2
5800 033520 013737 006506 006542      MOV      ERRCNT,TEMP3
5801 033526 004737 020316      JSR      PC,LOGEOP      ;LOG END OF PASS
5802
5803 033532 022737 177777 006576      CMP      #-1,RPASS      ;SEE IF RPASS=-1
5804 033540 001403                      BEQ      1$              ;IF IT IS DON'T DECRMNT, LOOP FOREVER
5805 033542 005337 006576      DEC      RPASS          ;DEC PASS COUNT
5806 033546 001402                      BEQ      2$              ;IF DONE EXIT TEST
5807 033550 000137 032140      1$:  JMP      GTRX2          ;ELSE GO BACK AND DISPATCH
5808 033554 042777 000120 155670 2$:  BIC      #RINTEN!RXENA,@RXCSR ;TURN OFF RX
5809 033562 000137 026642      JMP      GTRA5          ;WHEN RPASS=0 GO BACK TO 'DCLT>'
5810

```

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DOWN-LINE-LOAD SECTION

```

5811 .SBTTL          DOWN-LINE-LOAD SECTION
5812 :++
5813 : FUNCTIONAL DESCRIPTION:
5814 : DOWN LINE LOAD IS NOT SUPPORTED BY THIS DEVICE..
5815 : IF THIS MODE IS CALLED BY THE COMMAND LINE INTERPRETER
5816 : THEN A MESSAGE WILL BE PRINTED ....THAT SAYS DOWN LINE
5817 : LOAD IS NOT!! SUPPORTED BY THIS DEVICE.
5818 :--
5819
5820
5821
5822 033566          PLA:
5823 033566          PRINTF #DLLCM
5824 033566 012746 014122          MOV #DLLCM,-(SP)
5825 033572 012746 000001          MOV #1,-(SP)
5826 033576 010600          MOV S,RO
5827 033600 104417          TRAP C$PNTF
5828 033602 062706 000004          ADD #4,SP
5829 033606 000137 026642          JMP GTRAS
5830

```

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TALK MODE SECTION

.SBTTL TALK MODE SECTION

++  
FUNCTIONAL DESCRIPTION:  
TALK MODE SECTION  
IN THIS MODE, THE 'TALK' END OF THE LINK TRANSMITS OPERATOR  
SPECIFIED MESSAGES UNTIL A 'EXIT' MESSAGE IS TYPE. AT THAT POINT,  
THIS END OF THE LINK GOES INTO 'LISTEN' MODE.

SUBORDINATE ROUTINES USED:

'LOGTXQ' - LOG TX BUFFER QUED TO EVENT LOG  
'DVTXRX' - QUE TX BUFFER TO DEVICE AND WAIT FOR COMPLETE  
'LOGTXC' - LOG TX COMPLETE TO EVENT LOG

CALLING SEQUENCE:

JMP @MODE(R2) ;DISPATCH TO MODE BASED ON MODE TYPE IN R2

TALCK:

BIC #DATCKB,PARAM ;SET NOCHECK

MOV #OPBUF,R2

1\$: MOV #-1,(R2)+ ;CLEAR OUT OPBUFFER FIRST

CMP #OPEND,R2

BNE 1\$

GMANID OPRMM,OPBUF,A,-1,1,72.,NO ;GET TALK MESSAGE

TRAP  
BR 10001\$  
.WORD OPBUF  
.WORD T\$CODE  
.WORD OPRMM  
.WORD -1  
.WORD T\$LOLIM  
.WORD T\$HILIM

10001\$:

CLR R2 ;NOW GET CHAR COUNT

CMPB #377,OPBUF(R2)

BEQ 3\$

INC R2

BR 2\$

MOV R2,OPCNT

2\$: MOV #OPBUF,DVTXA ;SET UP TX ADDR.

MOV #OPBUF,TEMP2

MOV OPCNT,TEMP3

MOV OPCNT,DVTCC ;SET UP TX CC

JSR PC,LOGTXQ

BIS #QTX+#ETX,FLAG ;SET UP FLAGS

CLR CPTRR ;CLEAR RX POINTER

;;THIS CODE ADDED FOR PROTOCOL

BIT #PROTOB,PARAM ;'/PROTOCOL' ?

BEQ 20\$ ;NO BRANCH

BIC #RXQ,FLAG ;CLEAR RX BIT

CALL PROTOCOL ;DO DDCMP TRANSMIT

BR 25\$ ;BRANCH

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5850 033612  
5851 033612 042737 000002 006574  
5852 033620 012702 002520  
5853 033624 012722 177777  
5854 033630 022702 002642  
5855 033634 001373  
5856 033636  
5857 033636 104443  
5858 033640 000406  
5859 033642 002520  
5860 033644 000142  
5861 033646 014056  
5862 033650 177777  
5863 033652 000001  
5864 033654 000110  
5865 033656  
5866 033656 005002  
5867 033660 122762 000377 002520 2\$:  
5868 033666 001402  
5869 033670 005202  
5870 033672 000772  
5871 033674 010237 002166 3\$:  
5872  
5873 033700 012737 002520 006454  
5874 033706 012737 002520 006540  
5875 033714 013737 002166 006542  
5876 033722 013737 002166 006456  
5877 033730 004737 020076  
5878 033734 052737 000210 006600  
5879 033742 005037 006522  
5880  
5881  
5882 033746 032737 000040 006574  
5883 033754 001406  
5884 033756 042737 000004 006600  
5885 033764 004737 040702  
5886 033770 000402

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TALK MODE SECTION

5887								
5888	033772	004737	035270		20\$:	JSR	PC,DVTXRX	
5889	033776	013737	006454	006540	25\$:	MOV	DVTXA,TEMP2	
5890	034004	013737	006456	006542		MOV	DVTCC,TEMP3	
5891	034012	004737	020114			JSR	PC,LOGTXC	
5892	034016	022737	054105	002520		CMP	#'EX,OPBUF	:CHECK FOR EXIT
5893	034024	001272				BNE	TALCK	
5894	034026	022737	052111	002522		CMP	#'IT,OPBUF+2	
5895	034034	001266				BNE	TALCK	
5896	034036	042737	000210	006600		BIC	#QTX+#ETX,FLAG	:CLEAR THE TX BITS
5897	034044	012737	000006	006566		MOV	#LIS,MODTYP	:CHANGE TO LISTEN MODE
5898	034052	000137	032140			JMP	GTRX2	:AND GO BACK TO DISPATCH

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LISTEN MODE SECTION

```

5899          .SBTTL          LISTEN MODE SECTION
5900
5901          :++
5902          : FUNCTIONAL DESCRIPTION:
5903          : LISTEN MODE SECTION
5904          : IN THIS MODE, THE 'LISTEN' END OF THE LINK PRINTS ALL OF THE MESSAGES
5905          : RECEIVED BY THE DEVICE ON THE OPERATOR'S CONSOLE. IF THE MESSAGE
5906          : RECEIVED IS AN 'EXIT' MESSAGE, THEN THE NODE ENTERS 'TALK' MODE.
5907          :
5908          : SUBORDINATE ROUTINES USED:
5909          :
5910          :         'DVRXQ' - QUE RECEIVE BUFFER SPACE TO DEVICE
5911          :         'LOGRXQ' - LOG RECEIVE BUFFER QUED TO EVENT LOG
5912          :         'DVTXRX' - WAIT FOR RX TO COMPLETE
5913          :         'LOGRXC' - LOG RX COMPLETE TO EVENT LOG
5914          :
5915          : CALLING SEQUENCE:
5916          :         JMP          @MODE(R2)          ;DISPATCH TO MODE BASED ON MODE TYPE IN R2
5917          :--
5918
5919 034056 042737 000002 006574 LISCK: BIC          #DATCKB,PARAM ;CLEAR CHECK BIT
5920 034064          PRINTF          #LISP          ;PRINT PROMPT FOR OPR.
5921 034064 012746 014045          MOV          #LISP,-(SP)
5922 034070 012746 000001          MOV          #1,-(SP)
5923 034074 010600          MOV          SP,R0
5924 034076 104417          TRAP          C$PNTF
5925 034100 062706 000004          ADD          #4,SP
5926 034104 012737 002520 006470 LISCKA: MOV          #OPBUF,DVRXA ;SET DEVICE UP TO REC AT OPBUF
5927 034112 012737 002520 006540 MOV          #OPBUF,TEMP2
5928 034120 012737 000122 006472 MOV          #82.,DVRCC ;SET UP CHAR COUNT TO 82.
5929 034126 012737 000122 006542 MOV          #82.,TEMP3
5930 034134 052737 000104 006600 BIS          #QRX+#ERX,FLAG ;SET UP FLAG
5931 034142 005037 006524 CLR          CPTR ;CLEAR THE TX.
5932
5933 ;; WAS PROTOCOL SELECTED ?
5934 034146 032737 000040 006574 BIT          #PROTOB,PARAM ;'/PROTOCOL' ?
5935 034154 001007          BNE          20$ ;YES,BRANCH
5936
5937 034156 004737 035166          JSR          PC,DVRXQ ;QUE RX
5938 034162 004737 020132          JSR          PC,LOGRXQ
5939 034166 004737 035270          JSR          PC,DVTXRX ;GO TO DEVICE RX. SUBROUTINE
5940 034172 000402          BR          25$ ;SKIP PROTOCOL
5941 034174 004737 040702 20$: CALL          PROTOCOL ;GO DDCMP PROTOCOL
5942 034200 013737 006470 006540 25$: MOV          DVRXA,TEMP2
5943 034206 013737 006472 006542 MOV          DVRCC,TEMP3 ;SET UP ADDR.AND CC.
5944 034214 004737 020150          JSR          PC,LOGRXC ;LOG COMPLETED
5945 034220 063737 006470 006472 ADD          DVRXA,DVRCC
5946 034226 105077 152240 CLR          @DVR:C
5947 034232          PRINTF          #OPBFPT
5948 034232 012746 002514          MOV          #OPBFPT,-(SP)
5949 034236 012746 000001          MOV          #1,-(SP)
5950 034242 010600          MOV          SP,R0
5951 034244 104417          TRAP          C$PNTF
5952 034246 062706 000004          ADD          #4,SP
5953 034252 022737 054105 002520 CMP          #'EX,OPBUF ;COMPARE FOR EX OF 'EXIT'
5954 034260 001311          BNE          LISCKA ;IF NOT EXIT THEN GO BACK

```

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LISTEN MODE SECTION

5955	034262	022737	052111	002522	CMP	#'IT,OPBUF+2	;IF FIRST HALF OK CHECK NEXT PART
5956	034270	001305			BNE	LISCKA	;IF NOT EXIT THE GO BACK
5957	034272	012737	000005	006566	MOV	#TAL,MODTYP	;CHANGE MODE TO TALK
5958	034300	000137	032140		JMP	GTRX2	;RETURN TO DISPATCHER
5959							
5960							

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DEVICE FUNCTION SUBROUTINES

```

5961 .SBTTL          DEVICE FUNCTION SUBROUTINES
5962
5963
5964
5965
5966 .SBTTL          DEVICE INIT SUBROUTINE
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5993
5994
5995 034304
5996
5997
5998 034304 012777 000001 155146
5999
6000 034312 105777 155134
6001 034316 001423
6002 034320
6003 034320 104422
6004
6005
6006
6007
6008 034322 012737 016747 006540
6009 034330 017737 155116 006542
6010 034336 017737 155116 006544
6011 034344 004737 020160
6012 034350 005237 006506
6013 034354
6014 034354 104457
6015 034356 000005
6016 034360 016747

```

```

:++
: FUNCTIONAL DESCRIPTION:
: DVINIT- DEVICE INIT ROUTINE
: THIS ROUTINE IS DEVICE DEPENDENT CODE THAT INITIS
: 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 (SELO,...) 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:
: ;MASTER CLEAR DEVICE
: MOV      #RESET,@TXCSR      ;DO A MASTER CLEAR
: TSTB    @RXCSR              ;SEE IF IT WORKED
: BEQ     DVIN1                ;BRANCH IF OK
: BREAK
:
: ;REPORT ERROR IF RESET
: ;DOES NOT WORK
:
: MOV      #DVEMO,TEMP2
: MOV      @RXCSR,TEMP3
: MOV      @TXCSR,TEMP4      ;LOAD UP ERRM. AND REG OUTPUTS
: JSR     PC,LGDVE           ;LOG TIME OUT WAITING FOR RUN
: INC     ERRCNT
: ERRSOFT 5,DVEMO,ERR13
:
: TRAP    CSBRK
:
: TRAP    CSERSOFT
: .WORD  5
: .WORD  DVEMO

```

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DEVICE INIT SUBROUTINE

```

6017 034362 017634
6018 034364 000747          BR DVINIT          ;GO BACK AND TRY MSTR CLR AGAIN IF ERROR
6019
6020                          ;SET TTL LOOP IF REQU'D
6021
6022 034366 042737 000003 006600 DVIN1: BIC      #3,FLAG          ;CLEAR INPUT AND OUTPUT INT FLAGS
6023 034374 042777 000010 155056      BIC      #TTL,@TXCSR        ;CLEAR INTERNAL LOOP
6024 034402 022737 000001 006570      CMP      #TTL,MLTYP        ;IS TTL SELECTED
6025 034410 001004          BNE      DVIN3            ; IF NOT GO TO 3
6026 034412 052777 000010 155040      BIS      #TTL,@TXCSR        ;ELSE SET INTERNAL LOOP
6027 034420 000455          BR       DVIN37
6028
6029 034422 022737 000002 006570 DVIN3: CMP      #CABLE,MLTYP        ;IF CABLE LOOP SKIP CHECK
6030 034430 001451          BEQ      DVIN37          ;FOR MODEM READY
6031
6032
6033 034432 022737 000004 006566          CMP      #DOW,MODTYP        ;CHECK IF DLL
6034 034440 001002          BNE      DVIN3A          ;BRANCH IF NOT DLL
6035 034442 000137 035102          JMP      DVINEX          ;ELSE EXIT
6036
6037 034446 012777 000002 154776 DVIN3A: MOV      #DTR,@RXCSR        ;SET UP DTR.
6038
6039 034454 012737 002000 006640          MOV      #2000,TIMER1
6040 034462 005737 006640 DVIN38: TST      TIMER1
6041 034466 001022          BNE      DVIN39          ;IF TIMER NOT OUT GO TO 39
6042
6043                          ;SET ERROR FOR NO MODEM READY
6044
6045 034470 012737 017375 006540          MOV      #DVEM6,TEMP2
6046 034476 017737 154750 006542          MOV      @RXCSR,TEMP3
6047 034504 017737 154750 006544          MOV      @TXCSR,TEMP4
6048 034512 004737 020160          JSR      PC,LGDVE
6049 034516 005237 006506          INC      ERRCNT
6050 034522          ERRSOFT 11,DVEM6,ERR13
6051 034522 104457
6052 034524 000013          TRAP    CSERSOFT
6053 034526 017375          .WORD  11
6054 034530 017634          .WORD  DVEM6
6055 034532 000745          .WORD  ERR13
6056 034534
6057 034534 104422          TRAP    CSBRK
6058 034536 017737 154710 011476          MOV      @RXCSR,IRXCSR        ;GET COPY OR RXCSR
6059 034544 032737 001000 011476          BIT      #BIT9,IRXCSR        ;IS MODEM READY SET
6060 034552 001743          BEQ      DVIN38
6061 034554 013777 011472 154672 DVIN37: MOV      DPVP1,@PCASAR        ;SET UP PCASAR
6062 034562 005737 011524          TST      RNODE            ;CHECK REMOTE NODE
6063 034566 001145          BNE      DVINEX          ;EXIT IF ITEP
6064 034570 005737 006572          TST      FHDPLX          ;IS THIS FULL DUPLEX
6065 034574 001542          BEQ      DVINEX          ;BANCH IF NOT
6066 034576 032737 000040 006574          BIT      #PROTOB,PARAM        ;'/PROTOCOL' ?
6067 034604 001136          BNE      DVINEX          ;YES.EXIT
6068
6069          ;; THIS START-STACK ROUTINE USED IN NON PROTOCOL, NON ITEP, FULL DUPLEX MODE
6070
6071 034606 112737 000005 002645          ;SET UP TO SEND STRT
6072 034614 052737 000060 006600          MOVB    #5,HDMSG+1          ;SET UP ENQ
          BIS      #RXM!TXM,FLAG        ;SET FLAG WORD

```

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DEVICE INIT SUBROUTINE

```

6073 034622 012737 000074 006644      MOV      #60.,TIMERS      ;SET TIMER FOR 1 MINUTE
6074 034630 004737 036574              JSR      PC,CTSSR        ;SET CTS IF NESC.
6075 034634 012737 000006 002646  DVIN41:  MOV      #6.,HDMCC        ;SET UP STRT CODE
6076 034642 004737 036444              JSR      PC,DVIN31       ;GO TX STRT AND CHK FOR RX.
6077 034646 005737 006644              TST      TIMERS
6078 034652 001466              BEQ      DVIN81          ;IF TIMER EXPIERED EXIT
6079
6080 034654 022737 000006 002660  DVIN4:  CMP      #6.,RDMCC        ;IS THE RCVD=STRT
6081 034662 001441              BEQ      DVIN8            ;IF SO GO TO ASTRT
6082 034664 022737 000007 002660      CMP      #7.,RDMCC        ;IS IT A STACK
6083 034672 001360              BNE      DVIN41          ;IF NOT STACK ETIHER GO BACK
6084
6085 034674 004737 036574      DVIN9:  JSR      PC,CTSSR        ;SET REQUEST TO SEND
6086 034700 042737 001010 006600      BIC      #QTX!PAD,FLAG    ;CLEAR TX COMPT FLAG.
6087 034706 012737 000001 002646      MOV      #1.,HDMCC        ;SET UP ACK
6088 034714 012737 002645 011502      MOV      #HDMMSG+1,MSGPTR ;SET UP POINTER
6089 034722 013737 002654 011504      MOV      HDMC,MSGCC
6090 034730 012737 000010 011506      MOV      #8.,SYNCC        ;SET UP SYNC COUNT
6091 034736 052777 000120 154514      BIS      #TXENA!TINTEN,@TXCSR
6092 034744 032737 000010 006600  DIVN91: BIT      #QTX,FLAG
6093 034752 001053              BNE      DVINEX          ;EXIT IF ACK SENT
6094 034754
6095 034754 104422
6096 034756 005737 006644              TST      TIMERS
6097 034762 001370              BNE      DIVN91          ;IF NOT TIMER EXPIRED RECHK TX.
6098 034764 000421              BR       DVIN81          ;IF TIMER OUT REPORT IT
6099
6100 034766 012737 000007 002646  DVIN8:  MOV      #7.,HDMCC        ;SET POTINTER TO STACK
6101 034774 004737 036444              JSR      PC,DVIN31       ;AND GO SEND STACK
6102 035000 005737 006644              TST      TIMERS
6103 035004 001411              BEQ      DVIN81          ;REPORT ERROR IF TIME OUT
6104 035006 022737 000001 002660      CMP      #1.,RDMCC        ;IS IT ACK RCVD?
6105 035014 001432              BEQ      DVINEX          ;IF SO EXIT
6106 035016 022737 000007 002660      CMP      #7.,RDMCC        ;IS IT STACK RCVD
6107 035024 001723              BEQ      DVIN9            ;IF SO SEND ACK
6108 035026 000757              BR       DVIN8            ;IF NEITHER SEND ANOTHER ACK
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6125
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6128
035030 012737 017311 006540  DVIN81: MOV      #DVEM5,TEMP2
035036 013737 002660 006542      MOV      RDMCC,TEMP3
035044 013737 002646 006544      MOV      HDMCC,TEMP4
035052 004737 020160              JSR      PC,LGDVE
035056 005237 006506              INC      ERRCNT
035062
035062 104457              ERRSOFT 10.,DVEM5,ERR13
035064 000012
035066 017311
035070 017634
035072 005237 006502      INC      OPVAR
035076 000137 034304      JMP      DVINIT          ;COUNT HOW MANY TIMES WE DO THIS.
                                ;TRY ALL OVER AGAIN
035102 004737 037006  DVINEX: JSR      PC,CLRRTS
035106 042737 173777 006600      BIC      #173777,FLAG
035114 052737 002000 006600      BIS      #INOV,FLAG
035122 000207      RTS      PC              ;RETURN TO CALLER

```

TRAP CSBRK

TRAP CSERSOFT  
.WORD 10  
.WORD DVEM5  
.WORD ERR13

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DEVICE INIT SUBROUTINE

6129  
6130

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DEVICE GET MODEM STATUS SUBROUTINE

```

6131 .SBTTL                DEVICE GET MODEM STATUS SUBROUTINE
6132
6133
6134
6135
6136 :++
6137 : FUNCTIONAL DESCRIPTION:
6138 :   'DVMODS' GET MODEM STATUS
6139
6140 : IMPLICIT INPUTS:
6141 :   THE BIT POSITION AND AVAILABILITY OF THE MODEM SIGNALS CTS,DSR,...RI,,
6142 :   FOUND IN THE DEPENDENT PORTION OF THE GLOBAL EQUATES SECTION.
6143
6144 : OUTPUTS:
6145 :   CURRENT MODEM SIGNAL VALUES IN 'MODS'
6146
6147 : CALLING SEQUENCE:
6148 :   JSR      PC,DVMODS
6149 :--
6150
6151 035124 017737 154322 007554 DVMODS: MOV      @RXCSR,MODS
6152 035132 042737 000040 007554      BIC      #BIT5,MODS      ;CLEAR BIT 5
6153 035140 032777 000040 154312      BIT      #BIT5,@TXCSR    ;SEE IT TM OR SQ SET
6154 035146 001403          DVMEX      ;IF NOT EXIT
6155 035150 052737 000040 007554      BIS      #BIT5,MODS      ;IF SET SET BIT 5 IN MODS
6156 035156 042737 106720 007554 DVMEX: RLC      #106720,MODS ;CLEAR ALL UNUSED BITS
6157 035164 000207          PC              ;RETURN TO CALLER
6158
6159

```

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DEVICE QUEUE RECEIVE SPACE SUBROUTINE

```

6160 .SBTTL                DEVICE QUEUE RECEIVE SPACE SUBROUTINE
6161
6162 :++
6163 : FUNCTIONAL DESCRIPTION:
6164 :   DVRXQ - THIS SUBROUTINE QUEUES THE RECIEVER BUFFER SPACE TO THE
6165 :   DEVICE, THEN CLEARS THE QRX BIT OF THE FLAG WORD.
6166
6167 : INPUTS:
6168 :   DVRXA = ADDRESS OF RX BUFFER SPACE
6169 :   DVRCC = BYTE CHAR COUNT OF RX BUFFER
6170 :   QRX FLAG BIT = SET BY CALLING ROUTINE
6171
6172 : OUTPUTS:
6173 :   QRX FLAG BIT = CLEARED BY ROUTINE
6174
6175 : CALLING SEQUENCE:
6176 :   JSR    PC,DVRXQ
6177 :--
6178
6179
6180 035166          DVRXQ:
6181 035166 032737 000004 006600      BIT    #QRX,FLAG
6182 035174 001434                                BEQ    DVREX                ;IF NOT RX THEN EXIT
6183                                     ;ELSE QUE RX
6184 035176 042737 000444 006600      BIC    #QRX+#BCC+#RXM,FLAG    ;CLEAR FLAG FOR RX
6185 035204 005737 011524                                TST    RNODE                ;IF NON ITEP GO TO 2
6186 035210 001415                                BEQ    DVRX2
6187 035212 052737 000440 006600      BIS    #RXM+#BCC,FLAG        ;GET JUST THE DATA NO CRC.
6188 035220 013737 006470 011512      MOV    DVRXA,RMSGPT
6189 035226 012737 000072 011514      MOV    #72,RMSGCC          ;SET UP RX TO GET ITEP MSG.
6190 035234 012737 000070 006472      MOV    #70,DVRCC
6191 035242 000406                                BR     DVRX3
6192
6193                                     ;ENABLE RX, RX INTERRUPTS,AND DATA SET INTERRUPTS
6194
6195 035244 012737 002657 011512      DVRX2: MOV    #RHDMMSG+1,RMSGPT    ;SET UP POINTER
6196 035252 013737 002654 011514      MOV    HDMC,RMSGCC        ;AND CC
6197 035260 052777 000160 154164      DVRX3: BIS    #RINTEN!RXENA!#DSITEN,QRXCSR
6198 035266 000207                                DVREX: RTS    PC            ;RETURN TO CALLER
6199

```

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DEVICE TRANSMIT AND RECEIVE SUBROUTINE

```

6200 .SBTTL                DEVICE TRANSMIT AND RECEIVE SUBROUTINE
6201
6202
6203
6204 :++
6205 : FUNCTIONAL DESCRIPTION:
6206 : DVTXRX-DEVICE TRANSMIT AND RECEIVE ROUTINE
6207 : THIS CODE QUES THE TRANSMIT BUFFER TO THE DEVICE
6208 : IF NEEDED. THE CODE THEN WAITS FOR A TX COMPLE,
6209 : RX COMPLETE OR BOTH. THE CODE REPORTS A TIME OUT
6210 : ERROR IF NO OUTPUT INTERRUPT IS RECIEVED BEFORE
6211 : 60 SECONDS. AFTER REPORTING ERROR TIMER IS RE STARTED
6212 : AND DEVICE WILL CONTINUE TO WAIT FOR INTERRUPT.
6213
6214 : INPUTS:
6215 : 'DVTXA' = ADDRESS OF TRANSMIT MSG.
6216 : 'DVTCC' = BYTE COUNT OF TRANSMIT MSG.
6217 : 'QTX' BIT = SET IF TRANSMIT REQUESTED
6218 : 'ETX' BIT = SET IF TRNASMIT EXPECTED
6219 : 'ERX' BIT = SET IF RECIEVE EXPECTED
6220
6221 : OUTPUTS:
6222 : 'DVTXA' = ADDRESS OF TX MSG. COMPLETED
6223 : 'DVTCC' = BYTE COUNT OF TX MSG. COMPLETED
6224 : 'QTX' = SET IF TX COMPLETED
6225 : 'DVRXA' = ADDRESS OF RX MSG. COMPLETED
6226 : 'DVRCC' = BYTE COUNT OF RX MSG. COMPLETED
6227 : 'QRX' = SET IF RX COMPLETED
6228
6229 : SUBORDINATE ROUTINES USED:
6230 :
6231 : 'LGDVE' - LOG DEVICE ERROR TO EVENT LOG
6232
6233 : CALLING SEQUENCE:
6234 : JSR PC,DVTXRX
6235 :
6236 :
6237 035270 032737 000010 006600 DVTXRX: BIT #QTX,FLAG ;ANY TX TO QUE
6238 035276 001444 BFQ DVTR3 ;IF NOT GO WAIT FOR OUPUT
6239 035300 042737 001030 006600 BIC #QTX+#TXM+PAD,FLAG ;CLEAR FLAG
6240 035306 004737 036574 JSR PC,CTSSR ;GO SET CTS
6241 035312 005737 011524 TST RNODE
6242 035316 001412 BEQ DVTR1 ;IF NON-ITEP GO TO 1
6243 035320 052737 000020 006600 BIS #TXM,FLAG ;SET THE BODY BIT
6244 035326 013737 006454 011502 MOV DVTXA,MSGPTR
6245 035334 013737 006456 011504 MOV DVTCC,MSGCC ;AND SET UP FOR ACTUAL DATA
6246 035342 000414 BR DVTR2
6247 :ENABLE TX AND TX INTER.
6248
6249 035 4 112737 000201 002645 DVTR1: MOVB #201,HMSG+1 ;SET UP SOH
6250 035352 012737 002645 011502 MOV #HMSG+1,MSGPTR ;SET POINTER TO HEADER
6251 035360 013737 006456 002646 MOV DVTCC,HMCC
6252 035366 013737 002654 011504 MOV HDMC,MSGCC ;SET CC FOR HEADER
6253 035374 012737 000177 011506 DVTR2: MOV #177,SYNCC ;SET UP FOR 177 SYNCS.
6254 035402 052777 000120 154050 BIS #TXENA!#TINTEN,@TXCSR
6255

```

```

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6256 035410 012737 000074 006644 DVTR3: MOV #60.,TIMERS ;SET TIMER FOR 60 SECS
6257
6258 035416 DVTR8: BREAK
6259 035416 104422
6260 035420 005737 006644 TST TIMERS ;IS TIMER EXPIRED TRAP C$BRK
6261 035424 001022 BNE TOINOT
6262
6263 ;LOG ERROR TIME OUT RX OR TX NOT COMPLETED
6264
6265 035426 012737 017110 006540 MOV #DVEM2,TEMP2
6266 035434 017737 154012 006542 MOV @RXCSR,TEMP3
6267 035442 017737 154012 006544 MOV @TXCSR,TEMP4
6268 035450 004737 020160 JSR PC,LGDVE
6269 035454 005237 006506 INC ERRCNT
6270 035460 ERRSOFT 7,DVEM2,ERR13
6271 035460 104457 TRAP C$ERSOFT
6272 035462 000007 .WORD 7
6273 035464 017110 .WORD DVEM2
6274 035466 017634 .WORD ERR13
6275 035470 000747 BR DVTR3 ;RETURN TO CHECK TIMER
6276
6277 035472 032737 000010 006600 TOINOT: BIT #QTX,FLAG ;IS IT TX COMPL?
6278 035500 001406 BEQ DVTR4 ;BRANCH IF TX NOT DONE.
6279 035502 004737 037006 JSR PC,CLRRTS
6280 035506 032737 000100 006600 BIT #ERX,FLAG ;ARE WE EXPECTING TO RX
6281 035514 001416 BEQ DVTR8 ;BRANCH IF NOT.
6282
6283 035516 032737 000004 006600 DVTR4: BIT #QRX,FLAG ;IS RX DONE
6284 035524 001734 BEQ DVTR8 ;GO BACK AND TIME IF NOT
6285
6286 035526 032737 000200 006600 BIT #ETX,FLAG ;ARE WE EXPECTG TO TX.
6287 035534 001406 BEQ DVTR8 ;BRANCH IF NOT.
6288
6289 035536 032737 000010 006600 BIT #QTX,FLAG ;IS IT TX COMPLETED
6290 035544 001724 BEQ DVTR8 ;GO BACK AND TIME OUT
6291 035546 004737 037006 JSR PC,CLRRTS ;CLEAR RTS IF NESC.
6292 035552 000207 DVTR8: RTS PC ;AND EXIT
6293

```

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DEVICE TRANSMIT AND RECEIVE SUBROUTINE

; 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 RX STATUS, 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
: RECDV 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 A STATUS INTERRUPT OCCURS THEN OVERRUN ERROR BIT IS CHECKED.
: 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

```

```

6338 035554          BGNSRV  DVRXI
6339 035554
6340 035554 010246          MOV      R2,-(SP)          ;SAVE R2
6341 035556 017737 153670 011476  MOV      @RXCSR,IRXCSR    ;MOV RX CSR TO IMAGE
6342 035564 032737 000010 006574  BIT      #MOCHK,PARAM    ;ANY MODEM CHANGES TO REPORT
6343 035572 001456          BEQ      RXIN21          ;IF NOT IGNORE DS CHANGE.
6344 035574 032737 002000 006600  BIT      #INOVR,FLAG     ;IS INIT OVER
6345 035602 001452          BEQ      RXIN21          ;NO THEN IGNORE DS CHANGE.
6346 035604 005737 011476          TST      IRXCSR
6347 035610 100047          BPL      RXIN21          ;IF DATA SET CHANGE IS NOT SET BR
6348 035612 013737 011476 011474  MOV      IRXCSR,CMODS    ;MOV THE NEW MODEM STATUS IN
6349 035620 042737 106760 011474  BIC      #106760,CMODS

```

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DEVICE INTERRUPT SERVICE ROUTINES

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6350 035626 032777 000040 153624          BIT    #TM,@TXCSR
6351 035634 001403                          BEQ    RXIN2          ;IF TEST MODE SET
6352 035636 052737 000040 011474          BIS    #TM,CMODS    ;SET IT IN NEW STATUS
6353 035644 013737 011474 006542  RXIN2: MOV    CMODS,TEMP3
6354 035652 013737 007554 006544          MOV    MODS,TEMP4
6355 035660 023737 006544 006542          CMP    TEMP4,TEMP3  ;COMPARE OLD TO CURRENT
6356 035666 001406                          BEQ    GLINC         ;INC GLITCH COUNT
6357 035670 005237 011522                          INC    MHRCNT        ;INC HARD COUNT
6358 035674 012737 016717 006540          MOV    #HRDMSG,TEMP2 ;SET UP HARD MESG.
6359 035702 000405                          BR     RXIN1
6360 035704 005237 011520 006540  GLINC: INC    MGLCNT    ;INC GLITCH COUNT
6361 035710 012737 016671 006540          MOV    #GLMSG,TEMP2 ;SET UP GLITCH
6362 035716 004737 020334 007554  RXIN1: JSR    PC,LOGMSC ;GO LOG MODEM STATUS CHANGE
6363 035722 013737 011474 007554          MOV    CMODS,MODS   ;MOVE CURRENT TO OLD
6364
6365          ;TEST FOR STATUS OR DATA
6366
6367 035730 032737 002200 011476  RXIN21: BIT    #RSTARY!RDATRY,IRXCSR
6368 035736 001544                          BEQ    RXINEX        ;IF NEITHER EXIT
6369 035740 017737 153512 011500          MOV    @RDSR,IRDSR
6370 035746 032737 000200 011476          BIT    #RDATRY,IRXCSR ;IS THIS DATA
6371 035754 001455                          BEQ    RXIN3         ;IF NOT GO TO 3
6372
6373          ;GET HERE WITH GOOD DATA
6374
6375 035756 013702 011512 011512  RXIN4: MOV    RMSGPT,R2
6376 035762 113722 011500          MOV    IRDSR,(R2)+  ;STORE DATA AWAY
6377 035766 010237 011512          MOV    R2,RMSGPT   ;PUT POINTER BACK
6378
6379
6380 035772 005337 011514          DEC    RMSGCC
6381 035776 001124                          PNE    RXINEX        ;GET OUT IF NOT ALL DONE
6382 036000 032737 000400 006600          BIT    #BCC,FLAG    ;IS THE BCC FLAG ALREADY SE
6383 036006 001066                          BNE    RXIN5         ;BRANCH IF YES.
6384 036010 032737 100000 011500          BIT    #RERR,IRDSR  ;IS THE ERR CHK BIT SET INDICATING
6385          ;GOOD BCC.
6386 036016 001022                          BNE    RXIN6         ;BRANCH IF GOO
6387 036020 013737 011500 006542          MOV    IRDSR,TEMP3
6388 036026 013737 011476 006544          MOV    IRXCSR,TEMP4
6389 036034 012737 017205 006540          MOV    #DVEM3,TEMP2
6390 036042 004737 020160          JSR    PC,LGDVE
6391 036046 005237 006506          INC    ERRCNT
6392 036052          ERRSOFT 8,DVEM3,ERR13
6393 036052 104457
6394 036054 000010
6395 036056 017205
6396 036060 017634
6397
6398 036062 000467          BR     RXIN8         ;DISABLE INTERRUPTS AND EXIT
6399
6400 036064 052737 000400 006600  RXIN6: BIS    #BCC,FLAG    ;SET FLAG
6401 036072 012737 000002 011514          MOV    #2,RMSGCC    ;SET THE COUNT TO 2
6402 036100 012737 011516 011512          MOV    #BCCW,RMSGPT ;SET POINTER TO BCC WORD
6403 036106 000460          BR     RXINEX
6404
6405          ;STATUS CHECK

```

```

TRAP  CSERSOFT
.WORD 8
.WORD DVEM3
.WORD ERR13

```

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DEVICE INTERRUPT SERVICE ROUTINES

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6406
6407 036110 032737 002000 011476 RXIN3: BIT #RSTARY,IRXCSR ;IS THIS A STATUS INT.
6408 036116 001454 BEQ RXINEX ;EXIT IF NOT
6409
6410 ;LOG OVERRUN ERROR
6411
6412 036120 012737 017245 006540 MOV #DVEM4,TEMP2
6413 036126 013737 011500 006542 MOV IRDSR,TEMP3
6414 036134 013737 011476 006544 MOV IRXCSR,TEMP4
6415 036142 004737 020160 JSR PC,LGDVE
6416 036146 005237 006506 INC ERRCNT
6417 036152 ERRSOF 9,DVEM4,ERR13
6418 036152 104457
6419 036154 000011 TRAP C$ERSOFT
6420 036156 017245 .WORD 9
6421 036160 017634 .WORD DVEM4
6422 036162 000424 .WORD ERR13
6423
6424 036164 032737 000040 006600 RXIN5: BIT #RXM,FLAG ;IS THE RX M BODY BIT SET
6425 036172 001020 BNE RXIN7 ;IF YES THEN ALL DONE
6426 036174 052737 000040 006600 BIS #RXM,FLAG
6427 036202 042737 000400 006600 BIC #BCC,FLAG ;CLEAR BCC AND SET RXM
6428 036210 013737 006470 011512 MOV DVRXA,RMSGPT ;MOVE ADDRESS TO POINTER
6429 036216 013737 002660 011514 MOV RHDACC,RMSGCC ;MOVE THE CHAR COUNT IN
6430 036224 013737 002660 006472 MOV RHDACC,DVRCC ;SET THE CC TO AMOUNT IN HEADER
6431 036232 000406 BR RXINEX ;AND FINISH.
6432
6433 036234 052737 000004 006600 RXIN7: BIS #ORX,FLAG ;SET FLAG BIT
6434
6435 036242 042777 000120 153202 RXIN8: BIC #RINTEN+RXENA,@RXCSR ;CLEAR INTAND RX ENABLE
6436
6437 036250 012602 RXINEX: MOV (SP)+,R2 ;RESTORE R2
6438 036252 ENDSRV
6439 036252
6440 036252 000002 L10020: RTI

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DEVICE TRANSMIT INTERRUPT ROUTINE

```

6441 .SBTTL                DEVICE TRANSMIT INTERRUPT ROUTINE
6442
6443
6444 :++
6445 : FUNCTIONAL DESCRIPTION:
6446 :     DEVICE TRANSMIT INT. ROUTINE
6447 :
6448 :     WHEN A TRANSMIT BUFFER EMPTY CAUSES AN INTERRUPT TO OCCUR
6449 :     THE PROGRAM COMES TO THIS ROUTINE.
6450 :     IF THE SYNC COUNT 'SYNCC' IS NON ZERO TSOM IS SET
6451 :     A SYNC CHAR IS LOADED TO TDSR AND THE SYNC COUNT IS
6452 :     DECREMENTED.
6453 :
6454 :     IF THE SYNC COUNT IS ZERO TSOM AND TEOM ARE RESET
6455 :     AND THE 'PAD' BIT IN FLAG WORD IS CHECKED IF IT IS
6456 :     SET THEN A PAD(377) CHAR IS LOADED TO TDSR AND TX
6457 :     INTERRUPT ENABLE IS CLEAR.
6458 :
6459 :     IF THE SYNC COUNT IS ZERO AND THE 'PAD' FLAG IS
6460 :     CLEAR THEN A BYTE IS PUT IN TDSR FROM THE ADDRESS
6461 :     IN MSGPTR AND THE MSG COUNT IS DECREMENTED
6462 :
6463 :     IF THE MSG COUNT GOES TO ZERO THE 'TXM' BIT IS
6464 :     CHECKED IF IT IS SET THE 'PAD' FLAG IS SET
6465 :     IF IT IS CLEAR THEN IT GETS SET AND MSGPTR IS
6466 :     LOADED WITH THE ADDRESS OF TXBUFF AND THE MSG
6467 :     COUNT IS LOADED WITH THE COUNT OF THE MSG TO
6468 :     BE TRANSMITTED.
6469 :
6470 : INPUTS:
6471 :     MSGPTR - IS SET TO THE ADDRESS OF THE MSG OR HEADER TO BE TX'D
6472 :     MSGCC  - IS SET TO THE COUNT OF MSG TO BE TX'D
6473 :
6474 : OUTPUTS:
6475 :     QTX - THIS BIT IS SET WHEN MSG IS TX'D OK.
6476 :
6477 :
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036254		BGNSRV	DVTXI		
036254					DVTXI::
036254	010246	MOV	R2,-(SP)		:SAVE R2
036256	005737	TST	SYNCC		:ANY SYNCs TO SEND
036262	001406	BEQ	TXIN1		:IF NOT GO TO 1
036264	013777	MOV	SYNCC,@TDSR		:ELSE SET TSOM AND SYNC WORD
036272	005337	DEC	SYNCC		:DEC SYNC COUNT
036276	001060	BNE	TXINEX		:IF NOT ZERO EXIT
036300	042777	TXIN1: BIC	#TEOM!TSOM,@TDSR		
036306	032737	BIT	#PAD,FLAG		:IS THE PAD BIT SET
036314	001414	BEQ	TXIN2		:GO TO 2 IF NOT SET
036316	012777	MOV	#377,@TDSR		:LOAD FF TO TX DATA REG.
036324	042777	BIC	#TINTEN,@TXCSR		:CLEAR TX INT ENABLE
036332	052737	BIS	#QTX,FLAG		:SET THE TX COMPLETE IN FLAG
036340	005237	INC	TXREADY		:TELL PROTOCOL MODULE THAT WE ARE DONE
036344	000435	BR	TXINEX		:AND EXIT
036346	013702	TXIN2: MOV	MSGPTR,R2		:LOAD R2 WITH TX ADDR.
036352	112277	MOVB	(R2)+,@TDSR		:LOAD DATA BYTE
036356	010237	MOV	R2,MSGPTR		:RESTORE POINTER
036362	005337	DEC	MSGCC		:DEC CC
036366	001024	BNE	TXINEX		

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DEVICE TRANSMIT INTERRUPT ROUTINE

6497	036370	052777	001000	153064	BIS	#TEOM,@TDSR	
6498	036376	032737	000020	006600	BIT	#TXM,FLAG	;IS THIS THE END OF DATA MSG.
6499	036404	001012			BNE	TXIN3	;IF SO SET THE PAD BIT
6500	036406	052737	000020	006600	BIS	#TXM,FLAG	;IF NOT MUST BE END OF HEADER
6501	036414	013737	006454	011502	MOV	DVTXA,MSGPTR	;SO SET UP MSGPTR FOR MSG
6502	036422	013737	006456	011504	MOV	DVTCC,MSGCC	;AND THE CC FOR MSG.
6503	036430	000403			BR	TXINEX	
6504	036432	052737	001000	006600	TXIN3: BIS	#PAD,FLAG	;SET THE PAD BIT
6505							
6506	036440	012602			TXINEX: MOV	(SP)+,R2	;RESTORE R2
6507	036442				ENDSRV		
6508	036442						
6509	036442	000002					

L10021: RTI

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DEVICE TRANSMIT CONTROL MSG

SBTTL DEVICE TRANSMIT CONTROL MSG

```

++
FUNCTIONAL DESCRIPTION:
THIS ROUTINE DOES THE FOLLOWING
QUES A RX SPACE AT RHDMSG+1
QUES A TX MSG FROM HDMSG+1
CHECKS FOR A TIMER EXPIRED
IF EXPIRED RETURN TO CALLER
ELSE CHECK FOR A TX MSG COMPLETED
IF TX COMPLETED CHECK FOR RX COMPLETED
ELSE RECHECK TIMER AND TX COMPLETED UNTIL
EITHER TX COMPLETE OR TIME OUT
IF TX COMPLETE AND RX NOT COMPLETE THEN
REQUE TX MSG.
ELSE IF RX COMPLETE RETURN.

INPUTS:
TXM - SET IN FLAG WORD
HDMSG+2 - TYPE OF CONTROL MSG..

SUBORDINATE ROUTINES USED:
"CLRRTS" - CLEAR REQUEST TO SEND IF HALF DUP.

CALLING SEQUENCE:
JSR PC,DVIN31

RETURN:
RETURN TO CALLER IF SOMETHING RX'D OR TIMER OUT.

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6538
6539 036444 042737 000004 006600 DVIN31: BIC #QTX,FLAG ;CLEAR RX COMPLE.
6540
6541 036452 012737 002657 011512 MOV #RHDMSG+1,RMSGPT ;SET UP POINTER
6542 036460 013737 002654 011514 MOV HDMC,RMSGCC ;AND CC
6543 ;ENABLE RCVR.
6544
6545 036466 052777 000160 152756 BIS #RINTEN!RXENA!DSITEN,@RXCSR
6546 ;SET UP TRANSMITTER TO SEND
6547
6548
6549 036474 004737 036574 DVIN32: JSR PC,CTSSR ;SET RTS
6550 036500 042737 001010 006600 BIC #QTX!PAD,FLAG ;CLEAR TX COMPT FLAG.
6551 036506 012737 002645 011502 MOV #HDMSG+1,MSGPTR ;MOVE THE CURRENT POINTER TO MSGPTR.
6552 036514 013737 002654 011504 MOV HDMC,MSGCC
6553 036522 012737 000010 011506 MOV #8,SYNCC ;SET UP SYNC COUNT
6554 036530 052777 000120 152722 BIS #TXENA!TINTEN,@TXCSR
6555 ;NOW WAIT FOR TIME OUT OR TX COMPLETE
6556
6557
6558 036536 DVIN35: BREAK
6559 036536 104422 TRAP CSBRK
6560 036540 005737 006644 TST TIMERS ;IS IT TIMED OUT
6561 036544 001412 BEQ DVIN34 ;IF YES EXIT
6562 036546 032737 000010 006600 BIT #QTX,FLAG ;IS TX DONE
6563 036554 001770 BEQ DVIN35 ;IF NOT GO BACK AND CK TIME OUT
6564 036556 004737 037006 JSR PC,CLRRTS ;GO CLEAR RTS IF NESC.
6565 036562 032737 000004 006600 BIT #QTX,FLAG ;DID WE RX ANYTHING

```

CVCLHC DPV-11 DATA COMM. LINK TEST  
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DEVICE TRANSMIT CONTROL MSG

6566 036570 001741  
6567 036572 000207  
6568

DVIN34: BEQ DVIN32 ;IF NOT RETRANSMIT LAST  
RTS PC ;RETURN TO CALLER

CVCLHC DPV-11 DATA COMM. LINK TEST  
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DEVICE RTS TO CTS DELAY

```

6569      .SBTTL                DEVICE RTS TO CTS DELAY
6570      ++
6571      : FUNCTIONAL DESCRIPTION:
6572      : CTSSR--THIS ROUTINE SETS REQUEST TO SEND TO MODEM
6573      : AND CHECKS FOR CLEAR TO SEND TO COME BACK
6574      : IF CTS DOES NOT COME BACK BEFORE TIMER EXPIRES
6575      : AND ERROR IS REPORTED AND WE TRY AGAIN.
6576      : THE ROUTINE IS SKIPPED IF INTERNAL LOOP IS SET.
6577
6578      :
6579      :; OUTPUTS:
6580
6581      : SUBORDINATE ROUTINES USED:
6582      : 'LGDVE' - LOG DEVICE ERROR
6583
6584      : CALLING SEQUENCE:
6585      : JSR PC,CTSSR
6586      :--
6587
6588 036574 022737 000001 006570 CTSSR: CMP #1,MLTYP ;IS THIS TTL LOOP
6589
6590 036602 001500 BEQ DVTXR9 ;BR IF YES
6591
6592 ;SET RTS AND WAIT FOR CTS
6593
6594 036604 032737 004000 006600 DVTXR3: BIT #FIRST,FLAG
6595 036612 001014 BNF CTSS3 ;IF NOT FIRST TIME SKIP DELY
6596 036614 012737 177777 006534 MOV #-1,TEMP
6597 036622 005237 006534 CTSS4: INC TEMP
6598 036626 BREAK
6599 036626 104422 TRAP CSBRK
6600 036630 005737 006534 TST TEMP
6601 036634 001372 BNE CTSS4 ;IF NOT ZERO GO BACK
6602 036636 052737 004000 006600 BIS #FIRST,FLAG ;SET FIRST FLAG.
6603 036644 012737 001750 006640 CTSS3: MOV #1000.,TIMER1 ;1000 TICKS
6604 036652 005737 006572 TST FHDPLX ;FULL DUPLEX ?
6605 036656 001012 BNE CTSS7 ;YES,BRANCH
6606
6607 036660 004737 035124 ;:CHECK FOR CARRIER
6608 036664 032737 010000 007554 10$: CALL DVMODS ;GET MODEM STATUS
6609 036672 001404 BIT #DCD,MODS ;CARRIER PRESENT?
6610 036674 005737 006640 BEQ CTSS7 ;NO,BRANCH
6611 036700 001401 TST TIMER1 ;TIME DONE?
6612 036702 000766 BEQ CTSS7 ;YES,BRANCH
6613 BR 10$ ;DO IT AGAIN
6614 036704 052777 000004 152540 CTSS7: BIS #RTS,@RXCSR ;SET REQUEST TO SEND
6615 036712 012737 001750 006640 MOV #1000.,TIMER1 ;SET UP TIMER
6616 036720 DVTXR2: BREAK
6617 036720 104422 TRAP CSBRK
6618 036722 032777 020000 152522 BIT #CTS,@RXCSR ;IS CLEAR TO SEND BACK
6619 036730 001025 BNE DVTXR1 ;BR. IF CTS IS SET
6620 036732 005737 006640 TST TIMER1 ;ELSE TEST IF TIME EXPIRED
6621 036736 001370 BNE DVTXR2 ;BR IF TIME NOT EXPRIED.
6622
6623 ;SET ERROR FOR NO CTS
6624

```

CVCLHC DPV-11 DATA COMM. LINK TEST  
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DEVICE RTS TO CTS DELAY

6625	036740	012737	017026	006540
6626	036746	017737	152500	006542
6627	036754	017737	152500	006544
6628	036762	004737	020160	
6629	036766	005237	006506	
6630	036772			
6631	036772	104457		
6632	036774	000006		
6633	036776	017026		
6634	037000	017634		
6635	037002	000700		
6636	037004			
6637	037004	000207		

```

MOV #DVEM1,TEMP2
MOV @RXCSR,TEMP3
MOV @TXCSR,TEMP4
JSR PC,LGDVE
INC ERRCNT
ERRSOFT 6,DVEM1,ERR13

```

```

TRAP CSERSOFT
.WORD 6
.WORD DVEM1
.WORD ERR13

```

```

DVTXR1: BR DVTXR3 ;THEN TRY TO SET RTS AGAIN
DVTXR9: RTS PC ;

```

CVCLHC DPV-11 DATA COMM. LINK TEST  
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DEVICE CLEAR REQUEST TO SEND

6638  
6639  
6640  
6641  
6642  
6643  
6644  
6645  
6646  
6647  
6648  
6649  
6650  
6651  
6652  
6653  
6654  
6655  
6656  
6657  
6658

```
.SBTTL                DEVICE CLEAR REQUEST TO SEND
:++
: FUNCTIONAL DESCRIPTION:
:   THIS ROUTINE CLEARS REQUEST TO SEND IF
:   IN HALF DUPLEX MODE OR MULTI-POINT.
: CALLING SEQUENCE:
:   JSR    PC,CLRRTS
:--
```

```
037006
037006 005737 037126
037012 001003
037014 005737 006572
037020 001011
037022 012737 002000 006540
037030 005337 006540
037034 001375
037036 042777 000004 152406
037044 000207
```

```
CLRRTS:
TST    MPPTP           ;MULTI-POINT?
BNE    20$            ;YES,BRANCH
TST    FHDPLX        ;IS THIS FULL DUPLEX
BNE    DVTR5         ;BRANCH IF YES
20$:   MOV    #2000,TEMP2
CLRR1: DEC    TEMP2
BNE    CLRR1         ;DELAY A WHILE TO ALLOW CRC
                        ;TO BE TXMITT'D BEFORE YOU
                        ;CLEAR REQUEST TO SEND
DVTR5: BIC    #RTS,@RXCSR
RTS    PC            ;RETURN TO CALLER
```

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DEVICE CLEAR REQUEST TO SEND

```

6659
6660          .SBTTL DDCMP PROTOCOL MODULE
6661          :*****
6662
6663          :          DCLT DDCMP PROTOCOL MODULE:
6664          :          THIS CODE WAS WRITTEN TO BE USED ONLY WITH DCLT.
6665
6666          .EVEN
6667          ;; LOCAL STORAGE
6668
6669          ;; TABLE OF STATISTICS AND ERRORS
6670          ;; NOTE: KEEP THE VARIABLES TOGETHER AND IN SEQUENCE
6671          ;; OTHERWISE THE RPT> ROUTINE WILL PRINT WRONG INFO.
6672
6673          037046 000000          PRSTAT: .WORD 0
6674
6675
6676
6677
6678
6679
6680
6681
6682
6683
6684
6685
6686          037050 000000          TMESTX: .WORD 0
6687          037052 000000          TMESRX: .WORD 0
6688
6689          037054          000          N:          .BYTE 0
6690
6691          037055          000          A:          .BYTE 0
6692
6693
6694          037056          000          T:          .BYTE 0
6695          037057          000          X:          .BYTE 0
6696
6697          037060          000          R:          .BYTE 0
6698          037061          000          TRIBN: .BYTE 0
6699
6700          ;; ERROR COUNTERS
6701          037062          000          REMTMO: .BYTE 0
6702          037063          000          GLOBCC: .BYTE 0
6703
6704          037064          000          REANAK: .BYTE 0
6705          037065          000          SELTHER: .BYTE 0
6706
6707          037066          000          RXTHER: .BYTE 0
6708          037067          000          TXTHER: .BYTE 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
;TOTAL DATA MESSAGES TRANSMITTED(16 BIT COUNTER)
;TOTAL DATA MESSAGES RECEIVED(16 BIT COUNTER)
;# OF HIGHEST SEQUENTIAL DATA MESSAGE TRANS
;; MITTED BY THIS STATION
;# OF THE HIGHEST SEQUENTIAL DATA MESSAGE
;; THAT HAS BEEN ACKNOWLEDGE TO THIS STATION
;# OF THE NEXT DATA MESSAGE TO BE TRANSMITTED
;LAST MESSAGE NUMBER TRANSMITTED
;LAST MESSAGE RECEIVED
;TRIB ADDRESS PT TO PT = 1
;REMOTE REPLY TIMEOUTS(ACKS SENT NUM=R)
;GLOBAL CRC ERRORS
;REASON FOR LAST NAK SENT
;SELECTION THRESHOLD ERROR
;RECEIVE THRESHOLD ERRORS
;TRANSMIT THRESHOLD ERRORS

```

CVCLHC DPV-11 DATA COMM. LINK TEST  
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DDCMP PROTOCOL MODULE

6709					
6710	037070	000	DEROUT: .BYTE 0		: DATA ERRORS OUTBOUND (NAKS RECEIVED
6711	037071	000	OUTMASK: .BYTE 0		: : REASONS = 1,2,OR 3)
6712					: MASK VALUES -- BIT0 = HEADER CRC ERROR
6713					: : -- BIT1 = DATA FIELD CRC ERROR
6714					: : -- BIT2 = REP RESPONSE NUM<>R
6715					:
6716	037072	000	DERIN: .BYTE 0		: DATA ERRORS INBOUND (NAKS TRANSMITTED
6717	037073	000	INMASK: .BYTE 0		: : REASONS = 1,2,OR 3)
6718					: MASK VALUES -- BIT0 = HEADER CRC ERROR
6719					: : -- BIT1 = DATA FIELD CRC ERROR
6720					: : -- BIT2 = REP RESPONSE NUM<>R
6721					:
6722	037074	000	LBUFFER: .BYTE 0		: LOCAL BUFFER ERRORS (NAKS SENT
6723	037075	000	LBMASK: .BYTE 0		: : REASONS = 8. OR 16.)
6724					: MASK VALUES -- BIT0 = BUFFER NOT AVAILABLE
6725					: : -- BIT1 = MESSAGE TOO LONG
6726					:
6727	037076	000	RBUFFER: .BYTE 0		: REMOTE BUFFER ERRORS (NAKS RECEIVED
6728	037077	000	RBMASK: .BYTE 0		: REASONS 8. OR 16.)
6729					: MASK VALUES -- BIT0 = BUFFER NOT AVAILBLE
6730					: : -- BIT1 = MESSAGE TOO LONG
6731					:
6732	037100	000	RMSTER: .BYTE 0		: REMOTE STATION ERRORS (NAKS RECEIVED
6733	037101	000	RMMASK: .BYTE 0		: REASON 9. OR 17.)
6734					: MASK VALUES-- BIT0 = RECEIVER OVERRUN
6735					: : BIT1 = FORMAT ERROR
6736					:
6737	037102	000	LOSTER: .BYTE 0		: LOCAL STATION ERRORS (NAKS SENT
6738	037103	000	LSMASK: .BYTE 0		: : REASON 9. OR 17.)
6739					: MASK VALUES -- BIT0 = RECEIVER OVERRUN
6740					: : -- BIT1 = FORMAT ERROR
6741					:
6742	037104	000000	RXTXTE: .WORD 0		: RX AND TX THRESHOLD ERRORS (OVERFLOWS)
6743	037106	000	SPARE0: .BYTE 0		
6744	037107	000	SPARE1: .BYTE 0		
6745	037110	000000	PROEND: .WORD 0		: END OF PROTOCOL COUNTERS
6746	037112	000000	IMFLAG: .WORD 0		: IMAGE OF MAIN CODE FLAG WORD
6747	037114	000000	RXPRC: .WORD 0		: -1 = MESSAGE RX'ED & 'ACK' SENT
6748	037116	000000	TXPRC: .WORD 0		: -1 = MESSAGE TX'ED & 'ACK' RECEIVED
6749	037120	000000	ASTRT: .WORD 0		: -1 = STACK SENT
6750	037122	000000	TXREADY: .WORD 0		: 1 = READY TO SEND ANOTHER MESSAGE
6751	037124	000000	PRUN: .WORD 0		: 1 = PROTOCOL RUNNING. USED IN THIS MODULE
6752	037126	000000	MPPTP: .WORD 0		: 1 = MULTI POINT NETWORK
6753	037130	000000	SELECT: .WORD 0		: 1 = THIS STATION CAN NOW TRANSMIT(HALF/DUPLEX)
6754	037132	000000	IMPRSTAT: .WORD 0		: COPY OF PROTOCOL STATUS WORD
6755	037134	000000	PRFLAG: .WORD 0		: USED TO COMMUNICATE WITH RX INTER. ROUTINE
6756	037136	000000	HDXMTP: .WORD C		: 1 = HALF DUPLEX OR MULTI-POINT
6757	037140	000000	PRTEMP: .WORD 0		: TEMPORARY WORK LOCATION
6758	037142	000000	TURNON: .WORD J		: 1 = RECEIVER IS ALREADY ON
6759	037144	000000	TIMEOUT: .WORD 0		: 20 = PRINT 'TX OR RX NOT COMPLETE'
6760					

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DDCMP PROTOCOL MODULE

```

6761
6762
6763
6764
6765      000001      HEADBCC = 1      ;HEADER BCC ERROR
6766      000002      DATABCC = 2      ;DATA BCC ERROR
6767      000003      REPSNT = 3      ;REP RESPONSE
6768      000010      BUFFNA = 10     ;BUFFER TEMPORARILY NOT AVAILABLE
6769      000011      RXOVRUN = 11    ;RECEIVER OVERRUN
6770      000020      MESLONG = 20    ;MESSAGE TOO LONG
6771      000021      FORMERR = 21    ;HEADER FORMAT ERROR
6772
6773
6774
6775
6776      000004      REPMSK = BIT2     ;REPLY RESPONSE
6777      000001      RXOVMSK= BIT0    ;RECEIVER OVERRUN
6778      000002      FMTMSK = BIT1    ;FORMAT ERROR
6779      000002      MTLMSK = BIT1    ;MESSAGE TOO LONG
6780      000001      BNAMSK = BIT0    ;BUFFER NOT AVAILABLE
6781
6782
6783
6784
6785
6786
6787
6788
6789
6790
6791      000001      ACK = 1          ;ACKNOWLEDGE MESSAGE
6792      000002      NAK = 2          ;NEGATIVE ACKNOWLEDGE MESSAGE
6793      000003      REP = 3          ;REPLY TO MESSAGE NUMBER
6794      000006      STRT = 6         ;START MESSAGE
6795      000007      STACK = 7        ;START ACKNOWLEDGE MESSAGE
6796
6797
6798
6799
6800
6801
6802
6803
6804
6805
6806
6807
6808
6809
6810

```

;; NAK REASONS VALUES AS USED IN NAK CONTROL MESSAGES

;; ADDITIONAL NAK BIT MASKS AS USED IN COUNTERS

;; MESSAGE TYPE DEFINITIONS

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

;;SUBTYPES OF CONTROL MESSAGES

;;STATUS WORD BIT DEFINITIONS

BCCOK = BIT0 ;BCC CHECKED GOOD  
BCCBAD = BIT1 ;BCC CHECKED BAD  
SACK = BIT2 ;SEND ACK  
SNAK = BIT3 ;SEND NAK  
SDATA = BIT4 ;SEND DATA  
RXD = BIT6 ;RECEIVER DONE  
NAKRX = BIT8 ;NAK RECEIVED  
MYDATA = BIT9 ;MY DATA  
SSTACK = BIT10 ;SEND START ACKNOWLEDGE  
SSTART = BIT11 ;SEND START

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DDCMP PROTOCOL MODULE

6811  
6812  
6813  
6814  
6815  
6816  
6817  
6818  
6819 037146 037256  
6820 037150 037305  
6821 037152 037343  
6822 037154 037377  
6823 037156 037471  
6824 037160 037555  
6825 037162 037635  
6826 037164 037721  
6827 037166 040003  
6828 037170 040065  
6829 037172 040162  
6830 037174 040256  
6831 037176 040354  
6832 037200 040452  
6833 037202 040540  
6834 037204 040625  
6835  
6836  
6837  
6838  
6839  
6840  
6841  
6842 037206 021640  
6843 037210 021640  
6844 037212 021640  
6845 037214 021666  
6846 037216 021666  
6847 037220 021666  
6848 037222 021666  
6849 037224 021666  
6850 037226 021666  
6851 037230 021724  
6852 037232 021724  
6853 037234 021724  
6854 037236 021724  
6855 037240 021724  
6856 037242 021724  
6857 037244 021640  
6858  
6859 037246 000000  
6860 037250 000000  
6861 037252 000000  
6862 037254 000000  
6863

```

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

```

```

STALST: .WORD STA0A      ; POINTER FOR OFFSET 0 ASCII
        .WORD STA1A      ; POINTER FOR OFFSET 1 ASCII
        .WORD STA2A      ; POINTER FOR OFFSET 2 ASCII
        .WORD STA3A      ; POINTER FOR OFFSET 3 ASCII
        .WORD STA4A      ; POINTER FOR OFFSET 4 ASCII
        .WORD STA5A      ; POINTER FOR OFFSET 5 ASCII
        .WORD STA6A      ; POINTER FOR OFFSET 6 ASCII
        .WORD STA7A      ; POINTER FOR OFFSET 7 ASCII
        .WORD STA10A     ; POINTER FOR OFFSET 10 ASCII
        .WORD STA11A     ; POINTER FOR OFFSET 11 ASCII
        .WORD STA12A     ; POINTER FOR OFFSET 12 ASCII
        .WORD STA13A     ; POINTER FOR OFFSET 13 ASCII
        .WORD STA14A     ; POINTER FOR OFFSET 14 ASCII
        .WORD STA15A     ; POINTER FOR OFFSET 15 ASCII
        .WORD STA16A     ; POINTER FOR OFFSET 16 ASCII
        .WORD STA17A     ; POINTER FOR OFFSET 17 ASCII

```

```

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

```

```

STAIND: .WORD PRIW
        .WORD PRIW
        .WORD PRIW
        .WORD PRIBB
        .WORD PRIBB
        .WORD PRIBB
        .WORD PRIBB
        .WORD PRIBB
        .WORD PRIBB
        .WORD PRIBB
        .WORD PRIBS
        .WORD PRIBS
        .WORD PRIBS
        .WORD PRIBS
        .WORD PRIBS
        .WORD PRIBS
        .WORD PRIW

```

```

LAST:   .WORD 0      ; LAST MESSAGE TO PRINT
FIR:    .WORD 0      ; FIRST MESSAGE TO PRINT
MES:    .WORD 0      ; HOLDS MESSAGE
MESDATA: .WORD 0     ; DATA PART OF MESSAGE

```

CVCLHC DPV-11 DATA COMM. LINK TEST  
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6864  
6865  
6866  
6867  
6868

\*\*\*\*\*  
: THE BELOW ASCIZ MESSAGES USED IN 'RPT>' LEVEL OF DCLT  
:

.NLIST BEX

037256	047045	047445	022466	STA0A: .ASCIZ /XN%06%S2%ASTATUS FLAGS/
037305	045	022516	033117	STA1A: .ASCIZ /XN%06%S2%ADATA MSGS. TX'MITTD/
037343	045	022516	033117	STA2A: .ASCIZ /XN%06%S2%ADATA MSGS. RX'CVD/
037377	045	022516	031517	STA3A: .ASCIZ /XN%03%S5%AHIGHEST MSG # TX'DXN%03%S5%AHIGHEST MSG # ACK'D/
037471	045	022516	031517	STA4A: .ASCIZ /XN%03%S5%ANEXT MSG # TO TXN%03%S5%ALAST MSG # TX'D/
037555	045	022516	031517	STA5A: .ASCIZ /XN%03%S5%AHIGHEST MSG # RX'DXN%03%S5%ATRIB ADDR/
037635	045	022516	031517	STA6A: .ASCIZ /XN%03%S5%AREMOTE TIME OUTSXN%03%S5%AGLOBAL CRC ERRS/
037721	045	022516	031517	STA7A: .ASCIZ /XN%03%S5%ANAK REASONXN%03%S5%ASELECT THRESH. ERRS/
040003	045	022516	031517	STA10A: .ASCIZ /XN%03%S5%ARX THRESH ERRSXN%03%S5%ATX THRESH. ERRS/
040065	045	022516	031517	STA11A: .ASCIZ /XN%03%S5%ADATA ERRORS OUTXN%03%S5%AHBCC %01% BCC %01% REP %01/
040162	047045	047445	022463	STA12A: .ASCIZ /XN%03%S5%ADATA ERRORS INXN%03%S5%AHBCC %01% BCC %01% REP %01/
040256	047045	047445	022463	STA13A: .ASCIZ /XN%03%S5%ALOCAL BUFFER ERRSXN%03%S5% NO BUFF %01% TOO BIG %01/
040354	047045	047445	022463	STA14A: .ASCIZ /XN%03%S5%AREMOTE BUFFER ERRSXN%03%S5% NO BUFF %01% TOO BIG %01/
040452	047045	047445	022463	STA15A: .ASCIZ /XN%03%S5%AREMOTE STA ERRSXN%03%S5%AOVRN %01% FORMAT %01/
040540	047045	047445	022463	STA16A: .ASCIZ /XN%03%S5%ALOCAL STA ERRSXN%03%S5%AOVRN %01% FORMAT %01/
040625	045	022516	033117	STA17A: .ASCIZ /XN%06%S2%ATX & RX THRESHOLD ERRORS(OVERFLOW)/

.EVEN

.LIST BEX

\*\*\*\*\*

6869  
6870  
6871  
6872  
6873  
6874  
6875  
6876  
6877  
6878  
6879  
6880

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DDCMP PROTOCOL MODULE

```

6881
6882
6883
6884
6885
6886
6887
6888
6889
6890
6891
6892
6893 040702 013737 006600 037112 PROTOC: MOV FLAG,IMFLAG ;SAVE COPY OF MAIN CODE 'FLAG' VARIABLE
6894 040710 012737 000001 037122 MOV #1,TXREADY ;INIT TRANSMITTER DONE FLAG
6895 040716 005037 037114 CLR RXPRC ;INIT RX PROCOTOL DONE
6896 040722 005037 037116 CLR TXPRC ;INIT TX PROCOTOL DONE
6897 040726 005037 037144 CLR TIMEOUT ;INIT PRINT TIMER
6898 040732 032737 000100 006574 BIT #PRORUN,PARAM ;PROTOCOL RUNNING ?
6899 040740 001067 BNE 7$ ;YES,BRANCH
6900
6901
6902
6903 040742 ;; PROTOCOL NOT RUNNING -- SO FIRE UP THE LINK
6904 040742 012746 000200 SETVEC INVEC,#PRRXI,#PRI04 ;LOAD RX PROTOCOL INTERRUPT ROUTINE
6905 040746 012746 044504 MOV #PRI04,-(SP)
6906 040752 013746 011464 MOV #PRRXI,-(SP)
6907 040756 012746 000003 MOV INVEC,-(SP)
6908 040762 104437 MOV #3,-(SP)
6909 040764 062706 000010 TRAP CSSVEC
6910 040770 005037 037136 CLR HDXMTP ;INIT HALF DUPLEX/MULTI-POINT FLAG
6911 040774 005737 006572 TST FHDPLX ;HALF DUPLEX ?
6912 041000 001403 BEQ 2$ ;YES,BRANCH
6913 041002 005737 037126 TST MPPTP ;MULTI POINT ?
6914 041006 001403 BEQ 3$ ;NO,BRANCH
6915 041010 012737 000001 037136 2$: MOV #1,HDXMTP ;SET HALF DUPLEX/MULTI-POINT
6916 041016 012737 000036 006644 3$: MOV #30,TIMERS ;30 SECONDS TO START
6917 041024 012737 000001 037130 MOV #1,SELECT ;INIT SELECT
6918 041032 005037 037142 CLR TURNON ;INIT YET ANOTHER FLAG
6919 041036 005037 037124 CLR PRUN ;INIT ANOTHER FLAG
6920 041042 005037 037120 CLR ASTRT ;INIT 'STACK SENT' FLAG
6921 041046 005037 037046 CLR PRSTAT ;INIT STATUS WORD
6922 041052 004737 041730 JSR PC,PROINT ;INIT PROTOCOL COUNTERS AND VARIABLES
6923 041056 005737 037126 TST MPPTP ;MULTI - POINT MODE ?
6924 041062 001005 BNE 4$ ;YES,BRANCH
6925 041064 052737 004000 037046 BIS #SSTART,PRSTAT ;TELL TX ROUTINE TO SEND 'START'
6926 041072 004737 045350 JSR PC,TXPROTO ;GO SEND IT
6927 041076 004737 042100 4$: JSR PC,RXPROTO ;GO WAIT FOR 'STACK' OR 'START'
6928 041102 032737 000100 006574 BIT #PRORUN,PARAM ;DID PROTOCOL START ?
6929 041110 001742 BEQ 3$ ;NO,TRY AGAIN
6930 041112 012737 000001 037124 MOV #1,PRUN ;THIS FLAG USED IN RXPROTO ROUTINE
6931
6932
6933 041120 012737 000003 006644 ;; IF HALF DUPLEX OR MULTI POINT, WE MUST MANAGE THE LINK DIFFERENTLY
6934 041126 005737 037136 7$: MOV #3,TIMERS ;SET UP TIMER
6935 041132 001076 BNE PRONDH ;HALF DUPLEX OR MULTI - POINT?
6936

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6937
6938 041134 022737 000003 006566 ;; IF FULL DUPLEX AND ACTIVE MODE-- JUMP
6939 041142 001440                                CMP #ACT,MODTYP ;ACTIVE MODE?
6940                                BEQ 200$ ;YES, BRANCH
6941
6942 ;; PROTOCOL IS RUNNING -- LINK IS HOT SO SEND DATA
6943 041144 032737 000010 037112 10$: BIT #QTX,IMFLAG ;TRANSMITTING A MESSAGE ?
6944 041152 001414                                BEQ 100$ ;NO,BRANCH
6945 041154 052737 000020 037046 20$: BIS #SDATA,PRSTAT ;SEND DATA FLAG
6946 041162 004737 045350                                CALL TXPROTO ;GO SEND THE MESSAGE
6947 041166 004737 042100                                CALL RXPROTO ;CHECK THE REPLY
6948 041172 005737 037116                                TST TXPRC ;MESSAGE TRANSMITTED & 'ACK'ED'?
6949 041176 001766                                BEQ 20$ ;NO,BRANCH
6950 041200 005237 037050                                INC TMESTX ;BUMP 'TOTAL MESSAGES TRANSMITTED' COUNTER
6951
6952 041204 005737 037114                                100$: TST RXPRC ;RECEIVE PROTOCOL FINISHED ?
6953 041210 001011                                BNE 110$ ;YES,BRANCH
6954 041212 032737 000004 037112                                BIT #QRX,IMFLAG ;RECEIVING A MESSAGE ?
6955 041220 001002                                BNE 105$ ;YES,BRANCH
6956 041222 000137 041670                                JMP PROTEX ;EXIT
6957
6958
6959 041226 004737 042100                                105$: CALL RXPROTO ;GO PROCESS INCOMING MESSAGE
6960 041232 000764                                BR 100$ ;SEE IF RECEIVE PROTOCOL COMPLETE
6961 041234 005237 037052                                110$: INC TMESRX ;BUMP 'TOTAL MESSAGES RECEIVED' COUNTER
6962 041240 000137 041670                                JMP PROTEX ;EXIT
6963
6964
6965 ;; ACTIVE MODE (FULL DUPLEX AND POINT TO POINT LINKS)
6966
6967 041244 004737 041774                                200$: CALL RXON ;TURN ON RECEIVER
6968 041250 052737 000020 037046 210$: BIS #SDATA,PRSTAT ;SEND DATA FLAG
6969 041256 004737 045350                                CALL TXPROTO ;DO SEND DATA MESSAGE
6970 041262 004737 042100                                215$: CALL RXPROTO ;GO PROCESS INCOMING MESSAGE
6971 041266 005737 037116                                TST TXPRC ;TX PROTOCOL DONE ?
6972 041272 001766                                BEQ 210$ ;NO,BRANCH
6973 041274 005737 037114                                TST RXPRC ;RX PROTOCOL DONE ?
6974 041300 001770                                BEQ 215$ ;NO,BRANCH
6975 041302 005237 037052                                INC TMESRX ;BUMP 'TOTAL MESSAGES RECEIVED'
6976 041306 005237 037050                                INC TMESTX ;BUMP 'TOTAL MESSAGE SENT' COUNTER
6977
6978 ;; TXREADY SET IN TX INTERRUPT ROUTINE
6979 041312 005737 037122                                220$: TST TXREADY ;MESSAGE SENT ?
6980 041316 001775                                BEQ 220$ ;NO,BRANCH
6981 041320 004737 041774                                CALL RXON ;TURN ON RECEIVER
6982 041324 000137 041670                                JMP PROTEX ;EXIT
6983
6984
6985 ::: THIS ROUTINE(PROHDX) IS USE IN HALF-DUPLEX PT-PT & MTP
6986
6987 041330                                PROHDX:
6988 041330 005737 006572                                10$: TST FHDPLX ;FULL DUPLEX ?
6989 041334 001072                                BNE PROFDX ;YES,BRANCH
6990 041336 032737 000010 037112                                BIT #QTX,IMFLAG ;TRANSMITTING ?
6991 041344 001424                                BEQ 100$ ;NO,BRANCH
6992 041346 005737 037130                                20$: TST SELECT ;DO WE HAVE THE SELECT BIT ?

```

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6993 041352 001005          BNE      30$          ;YES,BRANCH
6994 041354 004737 041774    CALL     RXON         ;TURN ON RX
6995 041360 004737 042104    25$:    CALL     RXLAIT    ;TURN ON RX AND WAIT FOR SELECT BIT
6996 041364 000770          BR       20$          ;DID WE GET THE SELECT BIT ?
6997 041366 052737 000020 037046 30$:    BIS      #SDATA,PRSTAT ;SEND DATA FLAG
6998 041374 004737 045350    CALL     TXPROTO     ;GO SENT IT
6999 041400 004737 042100    CALL     RXPROTO     ;CHECK REPLY
7000 041404 005737 037116    TST     TXPRC        ;TX PROTOCOL DONE ?
7001 041410 001756          BEQ     20$          ;NO,BRANCH
7002 041412 005237 037050    INC     TMESTX       ;BUMP TOTAL MESSAGES SENT
7003 041416 012737 000001 037116 100$:    MOV     #1,TXPRC     ;SET TX PROTOCOL DONE
7004 041424 005737 037114    103$:    TST     RXPRC        ;RX PROTOCOL DONE ?
7005 041430 001026          BNE     150$         ;YES,BRANCH
7006 041432 032737 000004 037112    BIT     #QRX,IMFLAG  ;RECEIVING ?
7007 041440 001002          BNE     110$         ;YES,BRANCH
7008 041442 000137 041670    JMP     PROTEX       ;EXIT
7009                                     ;; WAS THE BALL TOSSED BACK IN OUR COURT ?
7010 041446 005737 037130    110$:    TST     SELECT      ;HAVE WE RECEIVED THE SELECT BIT YET?
7011 041452 001005          BNE     130$         ;YES,BRANCH
7012 041454 004737 041774    CALL     RXON         ;TURN ON RECEIVER
7013 041460 004737 042104    115$:    CALL     RXWAIT     ;PROCESS DATA
7014 041464 000757          BR       103$        ;TRY AGAIN
7015 041466 052737 000004 037046 130$:    BIS      #SACK,PRSTAT ;SEND ACK TO TURN THE LINE AROUND
7016 041474 004737 045350    CALL     TXPROTO     ;SEND IT
7017 041500 004737 042100    CALL     RXPROTO     ;GO RECEIVE THE PENDING MESSAGE
7018 041504 000747          BR       103$        ;BRANCH
7019 041506 005237 037052    150$:    INC     TMESRX      ;BUMP 'RECIEVED MESSAGE COUNTER'
7020 041512 004737 041774    CALL     RXON         ;TURN ON RX
7021 041516 000137 041670    JMP     PROTEX       ;EXIT
7022
7023                                     ;; THIS ROUTINE(PROFDX:) USED WITH FULL DUPLEX-MULTI POINT LINKS
7024
7025 041522 032737 000010 037112 PROFDX: BIT     #QTX,IMFLAG ;TRANSMITTING ?
7026 041530 001003          BNE     10$          ;YES,BRANCH
7027 041532 012737 000001 037116    MOV     #1,TXPRC     ;SET TRANSMIT PROTOCOL COMPLETE
7028 041540 005737 037114    10$:    TST     RXPRC        ;WAS THE 1ST MESSAGE RX'ED DURING STARTUP?
7029 041544 001015          BNE     30$          ;YES,BRANCH
7030 041546 032737 000004 037112    BIT     #QRX,IMFLAG  ;RECEIVING ?
7031 041554 001004          BNE     20$          ;YES,BRANCH
7032 041556 012737 000001 037114    MOV     #1,RXPRC     ;SET RECEIVE PROTOCOL COMPLETE
7033 041564 000410          BR       100$        ;BRANCH
7034 041566 004737 042100    20$:    CALL     RXPROTO     ;PROCESS INCOMING MESSAGE
7035 041572 005737 037114    TST     RXPRC        ;DONE ?
7036 041576 001773          BEQ     20$          ;NO,BRANCH
7037 041600 005237 037052    30$:    INC     TMESRX      ;BUMP RX MESSAGE COUNT
7038 041604 000400          BR       100$        ;BRANCH
7039
7040 041606 005737 037116    100$:    TST     TXPRC        ;ANYTHING TO SEND ?
7041 041612 001024          BNE     135$        ;NO,BRANCH
7042
7043 041614 005737 037130    120$:    TST     SELECT      ;DO WE HAVE PERMISSION TO SEND ?
7044 041620 001005          BNE     130$         ;YES,BRANCH
7045 041622 004737 041774    CALL     RXON         ;TURN ON TX
7046 041626 004737 042104    125$:    CALL     RXWAIT     ;WAIT ON SELECT BIT
7047 041632 000770          BR       120$        ;TRY AGAIN
7048 041634 052737 000020 037046 130$:    BIS      #SDATA,PRSTAT ;SEND DATA FLAG

```



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041730 010146  
041732 113737 037061 006534  
041740 012701 037046  
041744 005021  
041746 020127 037110  
041752 001374  
041754 113737 006534 037061  
041762 112737 000001 037056  
041770 012601  
041772 000207  
  
005737 037142  
042000 001036  
042002 005037 037046  
042006 005037 002656  
042012 042737 000444 037134  
042020 052737 001000 037046  
042026 012737 002657 011512  
042034 013737 002654 011514  
042042 032737 000010 006574  
042050 001004  
042052 052777 000120 147372  
042060 000403  
042062 052777 000160 147362  
042070 012737 000001 037142  
042076 000207

```

*****
:
:   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.
:
*****

```

```

PROINT: MOV     R1, -(SP)           ;SAVE R1
        MOVB    TRIBN, TEMP       ;SAVE TRIB NUMBER
        MOV     #PRSTAT, R1       ;FIRST LOCATION TO CLEAR
10$:    CLR     (R1)+              ;CLEAR AND INCREMENT
        CMP     R1, #PROEND       ;LAST LOCATION TO CLEAR
        BNE    10$                ;NO BRANCH
20$:    MOVB    TEMP, TRIBN       ;RESTORE TRIB #
        MOVB    #1, T             ;FIRST MESSAGE # TO BE TRANSMITTED
        MOV     (SP)+, R1         ;RESTORE R1
        RETURN                    ;EXIT

```

```

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

```

```

RXON:   TST     TURNON            ;RX ALREADY ON ?
        BNE    RXONEX            ;YES, BRANCH
        CLR    PRSTAT            ;INIT STATUS WORD
        CLR    RHDMSG            ;INIT 1ST WORD OF RX BUFFER
        BIC   #QRX!#BCC!#RXM, PRFLAG ;FLAGS USED IN RX INTERRUPT ROUTINE
        BIS   #MYDATA, PRSTAT    ;ASSUME MESSAGE FOR ME
        MOV   #RHDMID, RMSGPT    ;BUFFER ADDRESS FOR HEADER PART ON MESSAGE
        MOV   HDMC, RMSGC        ;INIT CHARACTER COUNT = 6
        BIT   #MOCHK, PA        ;MODEM CHANGES WANTED ?
        BNE   20$                ;YES, BRANCH
        BIS   #RINTEN!R ENA, @RXCSR ;TURN ON RX
        BR    25$                ;BRANCH
20$:    BIS   #RINTEN!RXI VA!DSITEN, @RXCSR ;TURN ON RX
25$:    MOV   #1, TURNON         ;RX IS ON FLAG
RXONEX: RETURN

```

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042100  
042100 004737 041774  
  
042104  
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042104 104422  
042106 105737 002657  
042112 001007  
042114 005737 006644  
042120 001371  
042122 004737 043726  
042126 000137 043724  
  
  
  
042132 123727 002657 000005  
042140 001003  
042142 052737 000040 037134  
  
  
042150 032737 000003 037046  
042156 001021  
042160 005737 006644  
042164 001004  
042166 004737 043726  
042172 000137 042100

```
*****  
: 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 APPROPRIATE  
: ERROR COUNTERS WILL BE UPDATED BY THE ERROR  
: ROUTINE.  
:  
: SUBORDINATE ROUTINES USED: 'TXPROTO'  
: 'ERROR PROCESSOR'  
:*****
```

```
RXPROTO: CALL RXON ;TURN ON RECEIVER  
  
:: WAIT FOR FIRST CHARACTER TO APPEAR IN RX BUFFER  
RXWAIT:  
20$: BREAK ;CHECK FOR ^C  
  
TSTB RHDMID ;FIRST CHARACTER READ ? TRAP CSBRK  
BNE 30$ ;YES, BRANCH  
TST TIMERS ;60 SECONDS ELAPSED ?  
BNE 20$ ;NO, BRANCH  
JSR PC,ERRPRC ;CALL ERROR PROCESSOR  
JMP RXPREX ;EXIT  
  
:: IF A CONTROL MESSAGE THEN TELL RX INTR. TO PROCESS HEADER ONLY  
30$: CMPB RHDMID,#ENQ ;CONTROL MESSAGE ?  
BNE 40$ ;NO, BRANCH  
BIS #RXM,PRFLAG ;PROCESS HEADER ONLY  
  
:: WAIT FOR CRC TO BE CHECKED  
40$: BIT #BCCOK!BCCBAD,PRSTAT ;CRC CHECKED ?  
BNE 50$ ;YES, BRANCH  
TST TIMERS ;60 SECONDS ELAPSED ?  
BNE 45$ ;NO, BRANCH  
JSR PC,ERRPRC ;GO PROCESS ERROR  
JMP RXPROTO ;TRY AGAIN
```

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7158
7159
7160 042176 032737 000010 037046 45$: CHECK THAT RX WAS SERVICED QUICK ENOUGH(DETERMINED BY RX INTER. ROUTINE)
7161 042204 001761 :BIT #SNAK,PRSTAT :RX OVERRUN ?
7162 042206 004737 043726 :BEQ 40$ :NO,BRANCH
7163 042212 004737 045350 :JSR PC,ERRPRC :GO PROCESS ERROR
7164 042216 000137 042100 :JSR PC,TXPROTO :GO SEND NAK
7165 :JMP RXPROTO :TRY AGAIN
7166
7167 042222 032737 000002 037046 50$: IF HEADER CRC ERROR THEN LOG IT AND SEND NAK
7168 042230 001430 :BIT #BCCBAD,PRSTAT :CRC ERROR ?
7169 042232 052737 000010 037046 :BEQ 60$ :NO,BRANCH
7170 042240 152737 000001 037073 :BIS #SNAK,PRSTAT :SET SNAK (SEND NAK)
7171 042246 112737 000001 037064 :BISB #HEADBCC,INMASK :SET THE MASK
7172 042254 105237 037072 :MOVB #HEADBCC,REANAK :NAK REASON = 1
7173 042260 001003 :INCB DERIN :LOG DATA ERROR INBOUND
7174 042262 112737 000377 037072 :BNE 55$ :BRANCH IF NOT OVERFLOW
7175 042270 004737 043726 :MOVB #377,DERIN :LATCH COUNTER AT 256.
7176 042274 012737 000001 037130 55$: :JSR PC,ERRPRC :GO PROCESS ERROR
7177 042302 004737 045350 :MOV #1,SELECT :ASSUME S-BIT WAS SET IN FAULTY MESSAGE
7178 042306 000137 042100 :JSR PC,TXPROTO :GO SEND NAK
7179 :JMP RXPROTO :TRY AGAIN
7180
7181 042312 123737 037061 002664 60$: NOW CHECK THE ADDRESS OF THE MESSAGE- IS IT FOR ME ?
7182 042320 001422 :CMPB TRIBN,RHDADR :MY ADDRESS ?
7183 :BEQ 70$ :YES, BRANCH
7184
7185 042322 042737 001000 037046 62$: ITS NOT FOR ME, BUT COUNT IT OUT TO KEEP RX IN SYNC
7186 042330 032737 000100 037046 :BIC #MYDATA,PRSTAT :MESSAGE NOT FOR ME
7187 042336 001003 :BIT #RXD,PRSTAT :RECEIVER DONE ?
7188 042340 005737 006644 :BNE 65$ :YES,BRANCH
7189 042344 001366 :TST TIMERS :HAVE WE DAWDLED LONG ENOUGH ?
7190 :BNE 62$ :NO,BRANCH
7191 042346 032737 000001 037046 65$: :BIT #BCCOK,PRSTAT :DATA CRC OK ?
7192 042354 001002 :BNE 67$ :YES,BRANCH
7193 042356 105237 037063 :INCB GLOBCC :LOG GLOBAL CRC ERROR
7194 042362 000137 042100 67$: :JMP RXPROTO :GO RE-QUE BUFFER
7195
7196
7197
7198 7199 042366 105037 037066 70$: IS IT A CONTROL MESSAGE ? IF IT IS PROCESS IT
7200 042372 122737 000005 002657 :CLRB RXTHER :INIT RX THRESHOLD ERROR COUNTER
7201 042400 001402 :CMPB #ENQ,RHDMID :CONTROL MESSAGE ?
7202 042402 000137 043252 :BEQ 75$ :YES,BRANCH
7203 :JMP 200$ :GO PROCESS DATA MESSAGE
7204
7205 042406 122737 000002 002660 75$: IS IT A NAK ?
7206 042414 001022 :CMPB #NAK,RHD TYP :NAK?
7207 042416 032737 000100 006574 :BNE 90$ :NO,BRANCH
7208 042424 001002 :BIT #PRORUN,PARAM :PROTOCOL RUNNING ?
7209 042426 000137 042100 :BNE 80$ :YES,BRANCH
7210 042432 052737 000400 037046 80$: :JMP RXPROTO :IGNORE THIS MESSAGE
7211 042440 004737 043726 :BIS #NAKRX,PRSTAT :FLAG NAK RECEIVED
7212 042444 052737 000020 037046 :JSR PC,ERRPRC :GO LOG NAK REASON
7213 042452 004737 045350 :BIS #SDATA,PRSTAT :SEND DATA
:JSR PC,TXPROTO :GO RE-TRANSMIT PREVIOUS MESSAGE

```

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7214 042456 000137 042100

JMP RXPROTO

;GO RE-QUE RX

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7215
7216
7217 042462 122737 000001 002660 90$: CMPB #ACK,RHDTYP ;ACK ?
7218 042470 001057 BNE 100$ ;NO,BRANCH
7219 042472 032737 000100 006574 BIT #PRORUN,PARAM ;PROTOCOL RUNNING ?
7220 042500 001004 BNE 93$ ;YES,BRANCH
7221 042502 052737 000100 006574 BIS #PRORUN,PARAM ;TELL THE WORLD THAT LINK HAS STARTED
7222 042510 000445 BR 97$ ;EXIT
7223 042512 123737 037056 002662 93$: CMPB T,RHDREP ;CORRECT MESSAGE # ACKNOWLEDGED ?
7224 042520 001405 BEQ 95$ ;YES,BRANCH
7225 042522 005737 037136 TST HDXMTP ;HALF DUPLEX/MULTI -POINT ?
7226 042526 001036 BNE 97$ ;YES,BRANCH
7227 042530 000137 042100 JMP RXPROTO ;TRY AGAIN
7228 042534 105037 037067 95$: CLRB TXTHER ;INIT. TX THRESHOLD COUNTER
7229 042540 113737 037056 037054 MOVB T,N ;HIGHEST SEQUENTIAL MESSAGE # SENT
7230 042546 113737 037056 037057 MOVB T,X ;HIGHEST MESSAGE # SENT
7231 042554 113737 002662 037055 MOVB RHDREP,A ;HIGHEST MESSAGE # ACKNOWLEDGED TO THIS STATION
7232 042562 105237 037056 INCB T ;# OF NEXT DATA MESSAGE TO BE TRANSMITTED
7233 042566 012737 177777 037116 MOV #-1, TXPRC ;TRANSMIT PROTOCOL COMPLETE
7234 042574 022737 000003 006566 CMP #ACT,MODTYP ;ACTIVE MODE ?
7235 042602 001010 BNE 97$ ;NO,BRANCH
7236 042604 005737 037114 TST RXPRC ;RX PROTOCOL COMPLETE?
7237 042610 001005 BNE 97$ ;YES,BRANCH
7238 042612 005737 006572 TST FHDPLX ;HALF DUPLEX?
7239 042616 001402 BEQ 97$ ;YES,BRANCH
7240 042620 000137 042100 JMP RXPROTO ;GO PROCESS INCOMING MESSAGE
7241
7242 042624 000137 043724 97$: JMP RXPREX ;EXIT
7243
7244
7245 042630 122737 000003 002660 100$: CMPB #REP,RHDTYP ;REP ?
7246 042636 001054 BNE 150$ ;NO,BRANCH
7247
7248
7249 042640 032737 000100 006574 110$: BIT #PRORUN,PARAM ;PROTOCOL RUNNING ?
7250 042646 001002 BNE 110$ ;YES,BRANCH
7251 042650 000137 042100 JMP RXPROTO ;IGNORE MESSAGE- TRY AGAIN
7252 042654 123737 002663 037060 110$: CMPB RHDNUM,R ;HAVE WE RECEIVED THIS MESSAGE ?
7253 042662 001015 BNE 120$ ;NO, BRANCH
7254 042664 052737 000004 037046 BIS #SACK,PRSTAT ;SET SEND ACK
7255 042672 105237 037062 INCB REMTMO ;BUMP REMOTE TIME OUT COUNTER
7256 042676 001003 BNE 115$ ;BRANCH IF NOT OVERFLOW
7257 042700 112737 000377 037062 MOVB #377,REMTMO ;LATCH COUNTER AT 256.
7258 042706 004737 045350 115$: JSR PC, TXPROTO ;GO SEND ACK
7259 042712 000137 042100 JMP RXPROTO ;TRY AGAIN
7260
7261
7262 042716 052737 000010 037046 120$: BIS #SNAK,PRSTAT ;SET SEND NAK
7263 042724 112737 000003 037064 MOVB #REPSNT,REANAK ;SET REASON FOR NAK
7264 042732 105237 037072 INCB DERIN ;BUMP DATA ERROR INBOUND
7265 042736 001003 BNE 125$ ;BRANCH IF NOT OVERFLOW
7266 042740 112737 000377 037072 MOVB #377,DERIN ;LATCH AT 256.
7267 042746 152737 000004 037073 125$: BISB #REPMASK,INMASK ;ERROR REASON IS REMOTE TIME OUT
7268 042754 004737 043726 JSR PC,ERRPRC ;PROCESS NAK
7269 042760 004737 045350 JSR PC, TXPROTO ;GO SEND NAK
7270 042764 000137 042100 JMP RXPROTO ;TRY AGAIN

```

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```

7271
7272
7273 042770 122737 000006 002660 150$:  CMPB  #STRT,RHDTYP  ;START ?
7274 042776 001071          BNE  170$          ;NO,BRANCH
7275 043000 032737 000100 006574      BIT  #PRORUN,PARAM ;PROTOCOL RUNNING ?
7276 043006 001007          BNE  160$          ;YES,BRANCH
7277 043010 052737 002000 037046      BIS  #SSTACK,PRSTAT ;SEND START ACKNOWLEDGE
7278 043016 004737 045350      JSR  PC,TXPROTO    ;GO SEND STACK
7279 043022 000137 042100      JMP  RXPROTO       ;GO TO RX ROUTINE AND EXPECT ACK OR DATA
7280
7281
7282 043026 052737 000200 006574 160$:  BIS  #ABORT,PARAM  ;TELL MAIN CODE TO ABORT!!
7283 043034 012737 177777 037114      MOV  #-1,RXPRC    ;RECEIVE PROTCOL DONE
7284 043042 012737 177777 037116      MOV  #-1,TXPRC    ;TRANSMIT PROTOCOL DONE
7285 043050          PRINTF #165$      ;FATAL ERROR
7286 043050 012746 043074          MOV  #165$,-(SP)
7287 043054 012746 000001          MOV  #1,-(SP)
7288 043060 010600          MOV  SP,R0
7289 043062 104417          TRAP C$PNTF
7290 043064 062706 000004          ADD  #4,SP
7291 043070 000137 043724          JMP  RXPREX       ;EXIT
7292
7293 043074 047045 040445 052123 .NLIST BEX
165$:  .ASCIZ  /%N%ASTART RECEIVED WITH PROTOCOL RUNNING--ABORTING!!!
      .EVEN
      .LIST BEX
7294
7295
7296
7297 043162 122737 000007 002660 170$:  CMPB  #STACK,RHDTYP ;STACK ?
7298 043170 001012          BNE  180$          ;NO, BRANCH
7299 043172 052737 000004 037046      BIS  #SACK,PRSTAT  ;TELL TX ROUTINE TO SEND ACK
7300 043200 004737 045350      JSR  PC,TXPROTO    ;SEND ACK
7301 043204 052737 000100 006574      BIS  #PRORUN,PARAM ;SET 'PROTOCOL RUNNING' FLAG
7302 043212 000137 043724      JMP  RXPREX       ;EXIT
7303
7304
7305
7306 043216 052737 000010 037046 180$:  BIS  #SNAK,PRSTAT  ;SET SEND NAK FLAG
7307 043224 105237 037102          INCB LOSTER        ;LOCAL STATION ERROR
7308 043230 152737 000021 037103      BISB #FORMERR,LSMASK ;FORMAT ERROR
7309 043236 004737 043726      JSR  PC,ERRPRC    ;PROCESS ERROR
7310 043242 004737 045350      JSR  PC,TXPROTO    ;SEND NAK
7311 043246 000137 042100      JMP  RXPROTO       ;TRY AGAIN
7312
7313
7314
7315

```

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7318
7319 043252 005737 037114
7320 043256 001432
7321 043260 042737 001000 037046
7322 043266 005737 037116
7323 043272 001037
7324
7325 043274 123737 037056 002662
7326 043302 001033
7327 043304 113737 037056 037054
7328 043312 113737 037056 037057
7329 043320 113737 037056 037055
7330 043326 105237 037056
7331 043332 012737 177777 037116
7332 043340 000137 043724
7333
7334 043344 105237 037060
7335 043350 123737 037060 002663
7336 043356 001423
7337 043360 105337 037060
7338 043364 042737 001000 037046
7339 043372 032737 000100 037046
7340 043400 001003
7341 043402 005737 006644
7342 043406 001371
7343
7344
7345 043410 052737 000004 037046
7346 043416 004737 045350
7347 043422 000137 042100
7348
7349
7350 043426 032737 000100 037046
7351 043434 001021
7352
7353
7354 043436 005737 006644
7355 043442 001004
7356 043444 004737 043726
7357 043450 000137 042100
7358
7359
7360 043454 032737 000010 037046
7361 043462 001761
7362
7363
7364 043464 004737 043726
7365 043470 004737 045350
7366 043474 000137 042100
7367
7368
7369 043500 032737 000001 037046
7370 043506 001022
7371

:::HERE WE BEGIN PROCESSING DATA PART OF MESSAGE
200$: TST RXP RC :ALREADY PROCESSED A MESSAGE?
      BEQ 215$ :NO,BRANCH
      BIC #MYDATA,PRSTAT :TELL RX INTERRUPT ROUTINE NOT TO STORE THIS
      TST TXPRC :TX PROTOCOL COMPLETE ?
      BNE 220$ :YES,BRANCH
:: SEE IF IMPLICIT ACK IMBEDDED IN THIS MESSAGE
      CMPB T,RHDREP :RESP = MESSAGE SENT?
      BNE 220$ :NO,BRANCH
      MOVB T,N :HIGHEST # SENT
      MOVB T,Y :HIGHEST # SENT
      MOVB T,A :HIGHEST MESSAGE ACK'ED
      INCB T :NEXT MESSAGE TO SEND
      MOV #-1,TXPRC :TX PROTOCOL FINISHED
      JMP RXP REY :EXIT

215$: INCB R :EXPECTED #?
      CMPB R,RHDNUM :CORRECT MESSAGE #?
      BEQ 300$ :YES,PROCESS IT
      DECB R :SUBTRACT 1
      BIC #MYDATA,PRSTAT :JUST COUNT OUT MESSAGE-DON'T PUT IN BUFFER
220$: BIT #RXD,PRSTAT :WAIT FOR DONE
      BNE 250$ :BRANCH
      TST TIMERS :TIME OUT?
      BNE 220$ :NO,BRANCH

::SEND AN 'ACK'
250$: BIS #SACK,PRSTAT :SEND ACK
      CALL TXPROTO :GO SEND IT
      JMP RXPROTO :TRY AGAIN

:: IS DATA PART OF MESSAGE COMPLETE ?
300$: BIT #RXD,PRSTAT :MESSAGE COMPLETE ?
      BNE 330$ :YES,BRANCH

:: IS THE LINE DEAD ?
      TST TIMERS :TIMED-OUT ?
      BNE 305$ :NO,BRANCH
      JSR PC,ERRPRC :GO PROCESS TIMER ERROR
      JMP RXPROTO :TRY AGAIN

:: CHECK FOR RECEIVER OVERRUN OR BUFFER PROBLEM
305$: BIT #SNAK,PRSTAT :DID RX INTERRUPT SET THIS ?
      BEQ 300$ :NO,BRANCH

::RX ERROR SEND A NAK AND TRY AGAIN
      JSR PC,ERRPRC :GO PROCESS ERROR
      JSR PC,TXPROTO :SEND NAK
      JMP RXPROTO :TRY AGAIN

::CHECK FOR DATA CRC ERROR
330$: BIT #BCCOK,PRSTAT :DATA CRC GOOD ?
      BNE 400$ :YES,BRANCH

```

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```

7372      ;: LOG CRC ERROR AND SEND A NAK
7373 043510 052737 000010 037046      BIS      #SNAK,PRSTAT      ;SET SEND NAK FLAG
7374 043516 105237 037072      INCB     DERIN           ;BUMP DATA ERROR INBOUND COUNTER
7375 043522 001003      BNE      340$           ;BRANCH IF NOT OVERFLOW
7376 043524 112737 000377 037072      MOVB     #377,DERIN      ;LATCH AT 256.
7377 043532 152737 000002 037073 340$:      BISB     #DATABCC,INMASK ;SET DATA CRC BIT
7378 043540 004737 043726      JSR     PC,ERRPRC      ;GO PROCESS ERROR
7379 043544 004737 045350      JSR     PC,TXPROTO     ;GO SEND NAK
7380 043550 000137 042100      JMP     RXPROTO        ;TRY AGAIN
7381
7382
7383      ;: WE HAVE A GOOD MESSAGE !!! SO ACKNOWLEDGE IT
7384 043554 032737 000100 006574 400$:      BIT      #PRORUN,PARAM  ;PROTOCOL RUNNING?
7385 043562 001007      BNE     420$           ;YES,BRANCH
7386 043564 005737 037120      TST     ASTRT          ;DID WE SEND A STACK?
7387 043570 001001      BNE     415$           ;YES,BRANCH
7388 043572 000454      BR      RXPREX        ;EXIT
7389
7390      ;: NOTE: DMV/DPM WILL SEND 'START - STACK - DATA' FOR STARTUP SEQUENCE
7391 043574 052737 000100 006574 415$:      BIS      #PRORUN,PARAM  ;SET PROTOCOL RUNNING
7392
7393      ;: CHECK FOR AN IMPLICIT 'ACK'
7394 043602 123737 037056 002662 420$:      CMPB     T,RHDREP      ;RESP = MESSAGE SENT ?
7395 043610 001016      BNE     450$           ;NO,BRANCH
7396 043612 113737 037056 037054      MOVB     T,N           ;HIGHEST SEQ MESSAGE # SENT
7397 043620 113737 037056 037057      MOVB     T,X           ;HIGHEST MESSAGE SENT
7398 043626 113737 037056 037055      MOVB     T,A           ;HIGHEST MESSAGE 'ACK'ED'
7399 043634 105237 037056      INCB     T             ;NEXT MESSAGE # TO TRANSMIT
7400 043640 012737 177777 037116      MOV      #-1,TXPRC     ;SET TRANSMIT PROTOCOL COMPLETE
7401 043646 052737 000004 037046 450$:      BIS      #SACK,PRSTAT  ;SET SEND ACK FLAG
7402 043654 004737 045350      JSR     PC,TXPROTO     ;SEND ACK
7403 043660 012737 177777 037114      MOV      #-1,RXPRC     ;RECEIVE MESSAGE PROTOCOL FINISHED
7404 043666 005737 037124      TST     PRUN           ;PROTOCOL RUNNING ?
7405 043672 001414      BEQ     RXPREX        ;NO,BRANCH
7406 043674 005737 037136      TST     HDXMTP         ;FULL DUPLEX PT-PT?
7407 043700 001011      BNE     RXPREX        ;NO,BRANCH
7408 043702 022737 000003 006566      CMP      #ACT,MODTYP   ;ACTIVE MODE ?
7409 043710 001005      BNE     RXPREX        ;NO,BRANCH
7410 043712 005737 037116      TST     TXPRC         ;TRANSMIT PROTOCOL COMPLETE ?
7411 043716 001002      BNE     RXPREX        ;YES,BRANCH
7412 043720 000137 042100      JMP     RXPROTO        ;GO PROCESS MESSAGE
7413
7414 043724 000207      RXPREX: RETURN      ;DONE !!
7415

```

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```

*****
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 APPROPRIATE ERROR
              COUNTER IS INCREMENTED. IF THE TRANSMIT THRESHOLD
              COUNTER (TXTHER) OR RECEIVE THRESHOLD COUNTER
              REACHES 7, IT IS CLEARED AND THE CUMULATIVE
              RECEIVE/TRANSMIT THRESHOLD ERROR (RXTXTE) COUNTER
              IS BUMPED.
*****

```

::CHECK THE WATCHDOG TIMER

```

ERRPRC: TST     TIMERS           ;60 SECONDS ELAPSED
        BNE     10$             ;NO BRANCH
        BIT     #PRORUN,PARAM   ;PROTOCOL RUNNING ?
        BNE     7$             ;YES BRANCH

```

:: INFORM USER OF 'START - STACK' TIMEOUT

```

CLR     TEMP3           ;INIT IT
CLR     TEMP4           ;INIT IT
MOV     #DVEM5,TEMP2    ;'TIME OUT IN START-STACK SEQUENCE'
MOVB   RHDACC,TEMP3    ;RECEIVED DATA
MOVB   HDMCC,TEMP4     ;TRANSMITTED DATA
JSR    PC,LGDVE        ;LOG TIME OUT IN EVENT LOG
INC    ERRCNT          ;BUMP ERROR COUNT
ERRSOFT 10.,DVEM5,ERR13 ;PRINT ERROR

```

```

TRAP   CSERSOFT
.WORD  10
.WORD  DVEM5
.WORD  ERR13

```

```

INC    OPVAR           ;BUMP ERROR COUNTER
MOV    #30.,TIMERS    ;RE-INIT TIMER
JMP    ERREXT         ;EXIT

```

:: INFORM USER OF 'DATA MESSAGE' TIMEOUT

```

7$: INC    TIMEOUT      ;BUMP COUNTER
   CMP    #20.,TIMEOUT ;60 SECONDS ?
   BNE    9$           ;NO BRANCH
   MOV    #DVEM2,TEMP2 ;'TIME OUT WAITING FOR RX OR TX TO COMPLETE'
   MOV    @RXCSR,TEMP3 ;RECEIVER ADDRESS
   MOV    @TXCSR,TEMP1 ;TRANSMIT ADDRESS
   JSR    PC,LGDVE    ;LOG ERROR
   INC    ERRCNT      ;BUMP ERROR COUNT
   ERRSOFT 7.,DVEM2,ERR13 ;PRINT ERROR

```

```

TRAP   CSERSOFT
.WORD  7

```

```

043726 005737 006644
043732 001075
043734 032737 000100 006574
043742 001034
043744 005037 006542
043750 005037 006544
043754 012737 017311 006540
043762 113737 002660 006542
043770 113737 002646 006544
043776 004737 020160
044002 005237 006506
044006 104457
044010 000012
044012 017311
044014 017634
044016 005237 006502
044022 012737 000036 006644
044030 000137 044502
044034 005237 037144
044040 022737 000024 037144
044046 001023
044050 012737 017110 006540
044056 017737 145370 006542
044064 017737 145370 006544
044072 004737 020160
044076 005237 006506
044102 104457
044104 000007

```

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7472	044106	017110								.WORD	DVEM2
7473	044110	017634								.WORD	ERR13
7474	044112	005037	037144			CLR	TIMEOUT				
7475											
7476	044116	012737	000003	006644	9\$:	MOV	#3.,TIMERS				
7477	044124	000566				BR	ERREXT				
7478											
7479											
7480											
7481	044126	032737	000400	037046	10\$:	BIT	#NAKRX,PRSTAT				
7482	044134	001542				BEQ	100\$				
7483											
7484											
7485	044136	122737	000007	037067							
7486	044144	001403				CMPB	#7,TXTHR				
7487	044146	105237	037067			BEQ	20\$				
7488	044152	000404				INCB	TXTHR				
7489	044154	005237	037104			BR	30\$				
7490	044160	105037	037067		20\$:	INC	RXTXTE				
7491						CLRB	TXTHR				
7492											
7493											
7494											
7495	044164	042737	140000	002660	30\$:	BIC	#BIT15!BIT14,RHDTP				
7496	044172	122737	000001	002661		CMPB	#HEADBCC,RHDTP+1				
7497	044200	001012				BNE	35\$				
7498	044202	105237	037070			INCB	DEROUT				
7499	044206	001003				BNE	32\$				
7500	044210	112737	000377	037070		MOVB	#377,DEROUT				
7501	044216	152737	000001	037071	32\$:	BISB	#HEADBCC,OUTMASK				
7502	044224	000526				BR	ERREXT				
7503											
7504											
7505	044226	122737	000002	002661	35\$:	CMPB	#DATABCC,RHDTP+1				
7506	044234	001012				BNE	40\$				
7507	044236	105237	037070			INCB	DEROUT				
7508	044242	001003				BNE	37\$				
7509	044244	112737	000377	037070		MOVB	#377,DEROUT				
7510	044252	152737	000002	037071	37\$:	BISB	#DATABCC,OUTMASK				
7511	044260	000510				BR	ERREXT				
7512											
7513											
7514	044262	122737	000010	002661	40\$:	CMPB	#BUFFNA,RHDTP+1				
7515	044270	001012				BNE	45\$				
7516	044272	105237	037076			INCB	RBUFFER				
7517	044276	001003				BNE	43\$				
7518	044300	112737	000377	037076		MOVB	#377,RBUFFER				
7519	044306	152737	000001	037077	43\$:	BISB	#BNAMSK,RBMASK				
7520	044314	000472				BR	ERREXT				
7521											
7522											
7523	044316	122737	000011	002661	45\$:	CMPB	#RXOVRUN,RHDTP+1				
7524	044324	001012				BNE	50\$				
7525	044326	105237	037100			INCB	RMSTER				
7526	044332	001003				BNE	47\$				
7527	044334	112737	000377	037100		MOVB	#377,RMSTER				

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```

7528 044342 152737 000001 037101 47$: BISB #RXOVMSK,RMMASK ;SET MASK
7529 044350 000454 BR ERREXT ;EXIT
7530
7531
7532 044352 122737 000020 002661 50$: CMPB #MESLONG,RHDTYP+1 ;MESSAGE TOO LONG?
7533 044360 001012 BNE 55$ ;NO,BRANCH
7534 044362 105237 037076 INCB RBUFER ;LOG REMOTE STATION BUFFER ERROR
7535 044366 001003 BNE 52$ ;BRANCH IF NO OVERFLOW
7536 044370 112737 000377 037076 MOVB #377,RBUFER ;LATCH AT 256.
7537 044376 152737 000002 037077 52$: BISB #MTLMSK,RBMASK ;SET MASK
7538 044404 000436 BR ERREXT ;EXIT
7539
7540
7541 044406 122737 000021 002661 55$: CMPB #FORMERR,RHDTYP+1 ;REMOTE STATION FORMAT ERROR?
7542 044414 001012 BNE 100$ ;NO,BRANCH
7543 044416 105237 037100 INCB RMSTER ;LOG ERROR
7544 044422 001003 BNE 57$ ;BRANCH IF NO OVERFLOW
7545 044424 112737 000377 037100 MOVB #377,RMSTER ;LATCH AT 256.
7546 044432 152737 000002 037101 57$: BISB #FMTMSK,RMMASK ;SET MASK
7547 044440 000420 BR ERREXT ;EXIT
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7549
7550
7551
7552 044442 032737 000010 037046 100$: BIT #SNAK,PRSTAT ;SEND NAK ?
7553 044450 001414 BEQ ERREXT ;NO, BRANCH
7554
7555 044452 122737 000007 037066 CMPB #7,RXOTHER ;RECEIVER THRESHOLD = 7?
7556 044460 001403 BEQ 120$ ;YES,BRANCH
7557 044462 105237 037066 INCB RXOTHER ;BUMP COUNTER
7558 044466 000405 BR ERREXT ;BRANCH
7559
7560 044470 005237 037104 120$: INC RXTXTE ;BUMP CUMULATIVE COUNTER
7561 044474 105037 037066 CLRB RXOTHER ;INIT RECEIVER THRESHOLD COUNTER
7562 044500 000400 BR ERREXT ;EXIT
7563
7564
7565
7566 044502 000207 ERREXT: RETURN
7567

```

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.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 5%:

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

PRRX!::

044504					MOV	R2, -(SP)	:SAVE R2
044504					MOV	@RXCSR, IRXCSR	:MOV RX CSR TO IMAGE
044504	010246				BIT	#MOCHK, PARAM	:ANY MODEM CHANGES TO REPORT
044506	017737	144740	011476		BEQ	PRIN2	:IF NOT IGNORE DS CHANGE.
044514	032737	000010	006574		BIT	#INOV, IMFLAG	:IS INIT OVER
044522	001462				BEQ	PRIN2	:NO THEN IGNORE DS CHANGE.
044524	032737	002000	037112		BIT	#FIRST, IMFLAG	:FIRST TIME HERE?
044532	001456				BEQ	PRIN2	:YES, BRANCH
044534	032737	004000	037112		TST	IRXCSR	:DATA SET CHANGE ?
044542	001452				BPL	PRIN2	:IF DATA SET CHANGE IS NOT SET BR
044544	005737	011476			MOV	IRXCSR, CMODS	:MOV THE NEW MODEM STATUS IN
044550	100047				BIC	#106760, CMODS	:CLEAR BITS NOT RELATING TO MODEM STATUS
044552	013737	011476	011474		BIT	#TM, @TXCSR	:TEST MODE?
044560	042737	106760	011474		BEQ	PRIN2	:NO, BRANCH
044566	032777	000040	144664		BIS	#TM, CMODS	:SET TM MODE IN CHANGE STATUS
044574	001403				PRIN2: MOV	CMODS, TEMP3	
044576	052737	000040	011474		MOV	MODS, TEMP4	
044604	013737	011474	006542		CMP	TEMP4, TEMP3	:COMPARE OLD TO CURRENT
044612	013737	007554	006544		BEQ	10\$	:INC GLITCH COUNT
044620	023737	006544	006542		INC	MHRCNT	:INC HARD COUNT
044626	001406				MOV	#HRDMSG, TEMP2	:SET UP HARD MMSG.
044630	005237	011522			BR	PRIN1	
044634	012737	016717	006540		10\$: INC	MGLCNT	:INC GLITCH COUNT
044642	000405				MOV	#GLMSG, TEMP2	:SET UP GLITCH
044644	005237	011520			PRIN1: JSR	PC, LOGMSC	:GO LOG MODEM STATUS CHANGE
044650	012737	016671	006540				
044656	004737	020334					

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RECEIVER PROTOCOL INTERRUPT ROUTINE

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7624 044662 013737 011474 007554      MOV      CMODS,MODS      ;MOVE CURRENT TO OLD
7625
7626      ;;TEST FOR DATA
7627
7628 044670 032737 002200 011476 PRIN21: BIT      #RSTARY!RDATRY,IRXCSR      ;RX DONE OR STATUS AVAILABLE ?
7629 044676 001002          BNE      10$           ;YES,BRANCH
7630 044700 000137 045344          JMP      PRINEX        ;EXIT
7631 044704 017737 144546 011500 10$:  MOV      @RDSR,IRDSR      ;SAVE A COPY OF STATUS & DATA
7632 044712 032737 004000 011500  BIT      #RXOVER,IRDSR      ;OVERRUN ERROR ?
7633 044720 001414          BEQ      PRIN4         ;NO,BRANCH
7634      ;;IF AN OVERRUN THEN LOG ERROR,SET NAK REASON,TURN OFF RX & EXIT
7635 044722 052737 000010 037046  BIS      #SNAK,PRSTAT      ;TELL MAIN CODE ABOUT OVERRUN ERROR
7636 044730 105237 037102          INCB     LOSTER          ;LOG LOCAL STATION ERROR
7637 044734 152737 000001 037103  BISB     #RXOVMSK,LSMASK    ;SET RX OVERRUN MASK BIT
7638 044742 112737 000011 037064  MOVB     #RXOVRUN,REANAK    ;SET REASON FOR SENDING NAK
7639 044750 000570          BR       PRIN8         ;GO TURN OFF RX AND EXIT
7640
7641
7642      ;;:IF IN MULTI-POINT MODE AND NOT MY ADDRESS THEN JUST BUMP CHAR COUNT
7643
7644      ;;STORE AWAY DATA
7645 044752 032737 001000 037046 PRIN4:  BIT      #MYDATA,PRSTAT ;STORE THIS DATA ?
7646 044760 001406          BEQ      10$           ;NO,BRANCH
7647 044762 013702 011512          MOV      RMSGPT,R2       ;SET RX MESSAGE POINTER
7648 044766 113722 011500          MOVB     IRDSR,(R2)+      ;STORE DATA AWAY
7649 044772 010237 011512          MOV      R2,RMSGPT       ;SAVE UPDATED MESSAGE POINTER
7650
7651      ;;DECREMENT CHARACTER COUNT
7652 044776 005337 011514 10$:  DEC      RMSGCC          ;ALL DATA RECEIVED ?
7653 045002 001160          BNE     PRINEX          ;NO,BRANCH
7654 045004 032737 000400 037134  BIT      #BCC,PRFLAG      ;CRC ALREADY CHECKED?
7655 045012 001022          BNE     PRIN5          ;YES,BRANCH
7656 045014 032737 100000 011500  BIT      #CRCOK,IRDSR      ;CRC GOOD ?
7657 045022 001004          BNE     PRIN6          ;YES,BRANCH
7658 045024 052737 000002 037046  BIS      #BCCBAD,PRSTAT    ;TELL MAIN CODE ABOUT CRC ERROR
7659 045032 000537          BR       PRIN8         ;DISABLE INTERRUPTS AND EXIT
7660
7661      ;;: READ 2 MORE CHARACTERS TO FLUSH CRC
7662 045034 052737 000400 037134 PRIN6:  BIS      #BCC,PRFLAG      ;SET CRC ALREADY CHECKED FLAG
7663 045042 012737 000002 011514  MOV      #2,RMSGCC        ;COUNT TWO CHARACTERS
7664 045050 012737 011516 011512  MOV      #BCCW,RMSGPT     ;CRC STORAGE ADDRESS
7665 045056 000532          BR       PRINEX        ;EXIT
7666
7667 045060 052737 000001 037046 PRIN5:  BIS      #BCCOK,PRSTAT ;TELL MAIN CODE CRC HAS BEEN CHECKED
7668 045066 123737 037061 002667  CMPB     TRISN,RHDADR      ;MY MESSAGE
7669 045074 001404          BEQ      5$           ;YES,BRANCH
7670 045076 042737 001000 037046  BIC      #MYDATA,PRSTAT    ;DON'T STORE IT
7671 045104 000407          BR       7$           ;BRANCH
7672
7673 045106 032737 100000 002660 5$:  BIT      #BIT15,RHDMCC    ;SELECT BIT SET?
7674 045114 001403          BEQ      7$           ;NO,BRANCH
7675 045116 012737 000001 037130  MOV      #1,SELECT        ;WE NOW HAVE THE RIGHT TO TRANSMIT,IF HALF-DUPL
7676
7677 045124 032737 000040 037134 7$:  BIT      #RXM,PRFLAG      ;READ DATA MESSAGE ?
7678 045132 001071          BNE     PRIN7          ;NO,BRANCH
7679

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7680
7681 045134 042737 000003 037046 ;;SET UP TO READ IN DATA PART OF MESSAGE
7682 045142 052737 000040 037134 BIC #BCCOK!BCCBAD,PRSTAT ;CLEAR FLAGS (USED IN PROTOCOL CODE)
7683 045150 042737 000400 037134 BIS #RXM,PRFLAG ;SET DATA MESSAGE READ FLAG
7684 045156 042737 140000 002660 BIC #BCC,PRFLAG ;CLEAR CRC CHECKED FLAG(USED BY THIS ROUTINE)
7685 BIC #BIT15!BIT14,RHDMCC ;CLEAR SELECT & QS BITS
7686
7687 045164 023727 002660 001000 ;;IS ALLOCATED BUFFER SPACE LARGE ENOUGH FOR MESSAGE?
7688 045172 003414 CMP RHDMCC,#512. ;WILL MESSAGE FIT IN MAX BUFFER SPACE
7689 BLE 10$ ;YES,BRANCH
7690
7691 045174 105237 037074 ;;MESSAGE TOO LONG !! LOG ERROR
7692 045200 152737 000002 037075 INCB LBUFFER ;LOG LOCAL BUFFER ERROR
7693 045206 112737 000020 037064 BISB #MTLMSK,LBMASK ;SET MESSAGE TOO LONG BIT
7694 045214 152737 000010 037046 MOVB #MESLONG,REANAK ;SET REASON FOR NAK
7695 045222 000443 BISB #SNAK,PRSTAT ;SET SEND NAK FLAG
7696 BR PRIN8 ;TURN OFF RX & EXIT
7697
7698 ;; IF A NEW BUFFER IS AVAILABLE
7699 045224 005737 037114 ;;SET BUFFER AND CHARACTER COUNT FOR MESSAGE
7700 045230 001420 10$: TST RXPRC ;IS RX PROTOCOL DONE?
7701 045232 105237 037074 BEQ 15$ ;NO,BRANCH
7702 045236 001003 INCB LBUFFER ;LOCAL BUFFER ERROR
7703 045240 012737 000377 037074 BNE 12$ ;OVERFLOW?
7704 045246 152737 000001 037075 MOV #377,LBUFFER ;LATCH A 256.
7705 045254 112737 000010 037064 BISB #BNAMSK,LBMASK ;SET MASK
7706 045262 152737 000010 037046 MOVB #BUFFNA,REANAK ;SET NAK REASON
7707 045270 000412 BISB #SNAK,PRSTAT ;SET 'SEND NAK FLAG'
7708 BR PRIN7 ;EXIT
7709 045272 013737 006470 011512 15$: MOV DVRXA,RMSGPT ;MESSAGE BUFFER ADDRESS
7710 045300 013737 002660 011514 MOV RHDMCC,RMSGCC ;CHARACTER COUNT OF MESSAGE
7711 045306 013737 002660 006472 MOV RHDMCC,DVRCC ;TELL MAIN CODE HOW LARGE MESSAGE IS
7712 045314 000413 BR PRINEX ;EXIT
7713
7714 ;;MESSAGE COMPLETE
7715 045316 052737 000004 037134 PRIN7: BIS #QRX,PRFLAG ;SET MESSAGE COMPLETE FLAG(USED BY MAIN CODE)
7716 045324 052737 000100 037046 BIS #RXD,PRSTAT ;MESSAGE COMPLETE(USED BY PROTOCOL MODULE)
7717
7718 045332 005037 037142 PRIN8: CLR TURNON ;RX NOT ON
7719 045336 042777 000120 144106 BIC #RINTEN+RXENA,@RXCSR ;TURN OFF RECEIVER
7720
7721 045344 012602 PRINEX: MOV (SP)+,R2 ;RESTORE R2
7722 045346 ENDSRV
7723 045346
7724 045346 000002 L10022:
7725 RTI
7726
7727

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.SBTTL PROTOCOL TRANSMIT ROUTINE

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: FUNCTIONAL DESCRIPTION:
: THIS ROUTINE IS USED TO SETUP EITHER CONTROL MESSAGES OR
: DATA MESSAGES FOR TRANSMISSION.
: IF THE SEND ACK(SACK) IS SET AN 'ACK' MESSAGE WILL BE SETUP
: AND TRANSMITTED.
: IF THE SEND NAK(SNAK) IS SET A 'NAK' MESSAGE WILL BE SETUP
: AND TRANSMITTED.
: IF NO FLAGS ARE SET, A DATA MESSAGE WILL BE SETUP AND SENT.
: IF THE NETWORK IS HALF-DUPLEX THEN REQUEST TO SEND(RTS) WILL
: BE ASSERTED BEFORE TRANSMISSION.

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7745 045350 013737 037046 037132 TXPROT: MOV PRSTAT,IMPRSTAT ;SAVE A COPY OF FLAGS
7746 045356 032737 000100 006574 BIT #PRORUN,PARAM ;PROTOCOL RUNNING ?
7747 045364 001407 BEQ 7$ ;NO,BRANCH
7748 045366 022737 000003 006566 CMP #ACT,MODTYP ;ACTIVE MODE?
7749 045374 001003 BNE 7$ ;NO,BRANCH
7750 045376 005737 037122 5$: TST TXREADY ;TRANSMITTER READY FOR MESSAGE ?
7751 045402 001775 BEQ 5$ ;NO,BRANCH

: IF HALF DUPLEX OR MULTI-POINT LINK, WE NEED THE SELECT BIT
: BEFORE WE CAN SEND.
7755 045404 005737 037136 7$: TST HDXMTPL ;FULL DUPLEX AND PT TO PT ?
7756 045410 001416 BEQ 9$ ;YES,BRANCH
7757 045412 005737 037130 6$: TST SELECT ;OK TO SEND ?
7758 045414 001003 BNE 8$ ;YES,BRANCH
7759 045420 004737 042100 CALL RXPROTO ;GO WAIT ON SELECT BIT
7760 045424 000772 BR 6$ ;TRY AGAIN

: DETERMINE WHAT TO SEND
7763 045426 005737 006572 8$: TST FHDPLX ;FULL DUPLEX?
7764 045432 001005 BNE 9$ ;YES,BRANCH

: IF HALF DUPLEX WE MUST DISABLE RX BEFORE SENDING
7766 045434 042777 000120 144010 BIC #RINTEN!RXENA,@RXCSR ;TURN OFF RX
7767 045442 005037 037142 CLR TURNON ;'RX NOT V' FLAG
7768 045446 013737 037132 037046 9$: MOV IMPRSTAT,PRSTAT ;RESTORE ORIGINAL FLAGS
7769 045454 113737 037061 002652 MOV#B TRIBN,HDMADR ;SET TRIB ADDRESS
7770 045462 042737 001000 006600 BIC #PAD,FLAG ;THIS BIT USED IN TX INTER ROUTINE
7771 045470 005037 037122 CLR TXREADY ;TRANSMITTER BUSY
7772 045474 005037 037130 CLR SELECT ;IF HALF DUPLEX/MTP MODE
7773 045500 032737 000004 037046 BIT #SACK,PRSTAT ;SEND ACK ?
7774 045506 001021 BNE 10$ ;YES,BRANCH
7775 045510 032737 000010 037046 BIT #SNAK,PRSTAT ;SEND NAK ?
7776 045516 001062 BNE 50$ ;YES,BRANCH
7777 045520 032737 004000 037046 BIT #SSTART,PRSTAT ;SEND START ?
7778 045526 001106 BNE 60$ ;YES,BRANCH
7779 045530 032737 002000 037046 BIT #SSTACK,PRSTAT ;SEND START ACKNOWLEDGE ?
7780 045536 001126 BNE 70$ ;YES,BRANCH
7781 045540 032737 000020 037046 BIT #SDATA,PRSTAT ;SEND DATA MESSAGE ?
7782 045546 001151 BNE 100$ ;YES,BRANCH
7783 045550 000000 HALT ;FATAL ERROR

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7784
7785
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7787
7788 045552 052737 000020 006600 10$: SETUP TO SEND AN 'ACK'
7789 045560 112737 000005 002645 10$: BIS #TXM,FLAG ;SEND HEADER ONLY(USED IN TX INTER. ROUTINE)
7790 045566 012737 000001 002646 10$: MOVB #ENQ,HDMID ;CONTROL MESSAGE
7791 045574 052737 140000 002646 10$: MOV #ACK,HDMTYP ;ACK CONTROL MESSAGE
7792 045602 005737 037136 10$: BIS #BIT15!BIT14,HDMTYP ;SET SELECT & QS FLAG
7793 045606 001415 10$: TST HDXMTYP ;HALF DUPLEX OR MULTI - POINT
7794 045610 005737 037116 10$: BEQ 20$ ;NO,BRANCH
7795 045614 001012 10$: TST TXPRC ;ANY THING TO SENT ?
7796 045616 032737 000100 006574 10$: BNE 20$ ;NO,BRANCH
7797 045624 001406 10$: BIT #PRORUN,PARAM ;PROTOCOL RUNNING?
7798 045626 042737 100000 002646 10$: BEQ 20$ ;NO,BRANCH
7799 045634 012737 000001 037130 10$: BIC #BIT15,HDMTYP ;CLEAR SELECT BIT
7800 045642 113737 037060 002650 20$: MOV #1,SELECT ;WE HAVE SOMETHING TO SEND, SO KEEP THE LINE
7801 045650 105037 002651 20$: MOVB R,HDMREP ;SET RESPONSE NUMBER
7802 045654 042737 000004 037046 20$: CLRB HDMNUM ;FILLER
7803 045662 000526 20$: BIC #SACK,PRSTAT ;CLEAR SEND ACK FLAG
7804 20$: BR 200$ ;GO SEND IT
7805
7806
7807 045664 052737 000020 006600 50$: SETUP TO SEND A 'NAK'
7808 045672 112737 000005 002645 50$: BIS #TXM,FLAG ;TELL TX INTERRUPT TO SEND HEADER ONLY
7809 045700 012737 000002 002646 50$: MOVB #ENQ,HDMID ;CONTROL MESSAGE
7810 045706 113737 037064 002647 50$: MOV #NAK,HDMTYP ;'NAK'
7811 045714 052737 140000 002646 55$: MOVB REANAK,HDMTYP+1 ;REASON FOR NAK
7812 045722 105037 002651 55$: BIS #BIT15!BIT14,HDMTYP ;SET SELECT & QS FLAGS
7813 045726 113737 037060 002650 55$: CLRB HDMNUM ;FILLER
7814 045734 042737 000010 037046 55$: MOVB R,HDMREP ;LAST MESSAGE RECEIVED CORRECTLY
7815 045742 000476 55$: BIC #SNAK,PRSTAT ;CLEAR SEND NAK FLAG
7816 55$: BR 200$ ;GO SEND IT
7817
7818
7819 045744 052737 000020 006600 60$: SETUP TO SEND START MESSAGE
7820 045752 112737 000005 002645 60$: BIS #TXM,FLAG ;TELL TX INT. ROUTINE TO SEND HEADER ONLY
7821 045760 012737 000006 002646 60$: MOVB #ENQ,HDMID ;CONTROL MESSAGE
7822 045766 052737 140000 002646 60$: MOV #STR,HDMTYP ;START MESSAGE
7823 045774 105037 002650 60$: BIS #BIT15!BIT14,HDMTYP ;SET SELECT & QS FLAGS
7824 046000 105037 002651 60$: CLRB HDMREP ;FILLER
7825 046004 042737 004000 037046 60$: CLRB HDMNUM ;FILLER
7826 046012 000452 60$: BIC #SSTART,PRSTAT ;CLEAR SEND START FLAG
7827 60$: BR 200$ ;GO SEND IT
7828
7829 046014 052737 000020 006600 70$: SETUP TO SEND STACK MESSAGE
7830 046022 112737 000005 002645 70$: BIS #TXM,FLAG ;TELL TX INT. TO SEND HEADER ONLY
7831 046030 012737 000007 002646 70$: MOVB #ENQ,HDMID ;CONTROL MESSAGE
7832 046036 052737 140000 002646 70$: MOV #STACK,HDMTYP ;START ACKNOWLEDGE MESSAGE
7833 046044 105037 002650 70$: BIS #BIT15!BIT14,HDMTYP ;SET SELECT & QS FLAGS
7834 046050 105037 002651 70$: CLRB HDMREP ;FILLER
7835 046054 012737 177777 037120 70$: CLRB HDMNUM ;FILLER
7836 046062 042737 002000 037046 70$: MOV #-1,ASTRT ;START HAS BEEN ACKNOWLEDGED
7837 046070 000423 70$: BIC #SSTACK,PRSTAT ;CLEAR SEND STACK FLAG
7838 70$: BR 200$ ;GO SEND IT
7839

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7840
7841 046072 042737 000020 000400 100$: BIC #TXM,FLAG ;TELL TX INTERRUPT TO SEND HEADER + DATA
7842 046100 112737 000201 002645 MOV #SOH,HDMID ;DATA MESSAGE
7843 046106 013737 006456 002646 MOV DVTCC,HDMCC ;CHARACTERS COUNT
7844 046114 052737 140000 002646 BIS #BIT15:BIT14,HDMCC ;SET SELECT & QS FLAGS
7845 046122 113737 037060 002650 MOV R,HDMREP ;LAST MESSAGE RECEIVED CORRECTLY
7846 046130 113737 037056 002651 MOV T,HDMNUM ;THIS MESSAGE NUMBER
7847 046136 000400 BR 200$ ;GO SEND IT
7848
7849
7850 046140 004737 036574 200$: JSR PC,CTSSR ;GO SET REQUEST TO SEND
7851 046144 052737 004000 037112 BIS #FIRST,IMFLAG ;TELL THE CTSSR SUBROUTINE TO SKIP DELAY
7852
7853
7854 046152 012737 002645 011502 210$: MOV #HDMID,MSGPTR ;HEADER MESSAGE ADDRESS
7855 046160 012737 000006 011504 MOV #6,MSGCC ;CHARACTER COUNT OF HEADER = 6
7856 046166 012737 000020 011506 MOV #20,SYNCC ;NUMBER OF SYNCs TO TRANSMIT
7857
7858
7859 046174 052777 000120 143256 215$: BIS #TXENA!#TINTEN,@TXCSR ;TURN ON TRANSMITTER
7860
7861
7862
7863
7864
7865 046202 005737 037136 217$: TST HDXMTPT ;FULL DUPLEX PT-PT
7866 046206 001005 BNE 220$ ;NO, BRANCH
7867 046210 022737 000003 006566 CMP #ACT,MODTYP ;ACTIVE MODE ?
7868 046216 001001 BNE 220$ ;NO, BRANCH
7869 046220 000406 BR TXPREX ;EXIT
7870
7871 046222 220$: BREAK
7872 046222 104422
7873 046224 005737 037122 TST TXREADY ;TX FINISHED ? TRAP C$BRK
7874 046230 001774 BEQ 220$ ;NO, BRANCH
7875
7876
7877 046232 004737 037006 230$: JSR PC,CLRTS ;IF HALF-DUPLEX OR MULTI-POINT REQUEST TO SEND WILL BE DROPPED
7878
7879 046236 004737 041774 TXPREX: CALL RXON ;TURN ON RX IF NECESSARY
7880 046242 000207 RETURN ;WE ARE DONE !
7881
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7889
7890 046244 104401 L10017: TRAP C$ETST
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HARDWARE PARAMETER CODING SECTION

.SBTTL HARDWARE PARAMETER CODING SECTION

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:++
: 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.
:

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7905							
7906							
7907	046246		BGNHRD				
7908	046246	000030					
7909	046250						
7910							
7911							
7912			.SBTTL	DEVICE INDEPENDENT SECTION			
7913							
7914	046250		GPRML	DPLX,0,1,YES			
7915	046250	000130				.WORD	T\$CODE
7916	046252	046330				.WORD	DPLX
7917	046254	000001				.WORD	1
7918							
7919							
7920							
7921							
7922			.SBTTL	DEVICE DEPENDENT SECTION			
7923							
7924	046256		GPRMA	CSRADR,2,0,160000,177776,YES			
7925	046256	001031				.WORD	T\$CODE
7926	046260	046361				.WORD	CSRADR
7927	046262	160000				.WORD	T\$LOLIM
7928	046264	177776				.WORD	T\$HILIM
7929	046266		GPRMA	VECTOR,4,0,300,776,YES			
7930	046266	002031				.WORD	T\$CODE
7931	046270	046407				.WORD	VECTOR
7932	046272	000300				.WORD	T\$LOLIM
7933	046274	000776				.WORD	T\$HILIM
7934	046276		GPRML	RNODM,14,1,YES			
7935	046276	006130				.WORD	T\$CODE
7936	046300	046442				.WORD	RNODM
7937	046302	000001				.WORD	1
7938	046304		XFERT	ENDHWL			
7939	046304	012024				.WORD	T\$CODE
7940	046306		GPRML	PTPMLP,10,1,YES			
7941	046306	004130				.WORD	T\$CODE
7942	046310	046466				.WORD	PTPMLP
7943	046312	000001				.WORD	1
7944	046314		XFERF	ENDHWL			
7945	046314	006044				.WORD	T\$CODE
7946	046316		GPRMD	TRIBNQ,12,D,-1,1,255.,YES			
7947	046316	005052				.WORD	T\$CODE
7948	046320	046524				.WORD	TRIBNQ
7949	046322	177777				.WORD	-1
7950	046324	000001				.WORD	T\$LOLIM

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 DEVICE DEPENDENT SECTION

7951 046326 000377

7952 046330

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7954 046330

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7956

ENDHWL: ENDHRD

.WORD T\$HILIM

.EVEN

L10023:

.NLIST BEX

;DEVICE INDEPENDENT QUESTIONS

046330 052506 046114 042040 DPLX: .ASCIZ /FULL DUPLEX OPERATION : /

;DEVICE DEPENDENT QUESTION

046361 104 053105 041511 CSRADR: .ASCIZ /DEVICE CSR ADDRESS : /  
 046407 111 052116 051105 VECTOR: .ASCIZ /INTERRUPT VECTOR ADDRESS: /  
 046442 042522 047515 042524 RNODM: .ASCIZ /REMOTE NODE "ITEP":/  
 046466 051511 052040 044510 PTPMLP: .ASCIZ /IS THIS A MULTIPOINT NETWORK:/  
 046524 042101 051104 051505 TRIBNQ: .ASCIZ /ADDRESS THIS STATION:/  
 .LIST BEX

.EVEN

7957

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DEVICE DEPENDENT SECTION

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7980
7981
7982
7983 046552
7984 046552 000030
7985
7986
7987 046632
7988
7989 046632 000000
7990 046634 000000
7991 046636
7992 046636
7993
7994 000001

```

```

;.SBTTL SOFTWARE PARAMETER CODING SECTION

:++
: THE SOFTWARE 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.
:--

:      BGNSFT

:      ENDSFT

:.....
: TEMPORARY PATCH AREA - FOR DEBUG PURPOSES
:.....

$PATCH:      .BLKW  30

              LASTAD

              .EVEN
              .WORD  0
              .WORD  0

L$LAST::
              ENDMOD

.END

```























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CROSS REFERENCE TABLE -- USER SYMBOLS

LOGDVI	020176	3290#	5385						
LOGEOP	020316	3311#	5801						
LOGEX	020606	3328	3375						
LOGMSC	020334	3317#	6362	7623					
LOGRXC	020150	3282#	5575	5944					
LOGRXQ	020132	3277#	5548	5938					
LOGS1	020352	3270	3275	3280	3284	3323#			
LOGS2	020600	3369	3373#						
LOGS3	020404	3288	3297	3302	3306	3310	3314	3320	3332#
LOGS4	020460	3340	3349#						
LOGS5	020504	3334	3336	3357#	4683				
LOGTXC	020114	3272#	5616	5891					
LOGTXQ	020076	3267#	5560	5877					
LOGUNT	006556	2632#	4566*	4568*	4569	4573			
LOOPS	003120	2553#	4121						
LOSTER	037102	6737#	7307*	7636*					
LOT	= 000010	G	2172#						
LPO	013714	2553	3018#	4120					
LP00	013715	3018#	4117						
LP1	013724	2554	3018#						
LP2	013735	2555	3018#						
LP3	013743	2556	3018#						
LP4	013756	2557	3018#						
LSMASK	037103	6738#	7308*	7637*					
LSACP	002110	G	2039#						
LSAPF	002036	G	1997#						
LSAU	026332	G	2024	4727#					
LSAUI	002070	G	2023#						
LSAUTO	026234	G	2040	4655#					
L\$CCP	002106	G	2037#						
L\$CLEA	026236	G	2038	4669#					
L\$CO	002032	G	1993#						
L\$DEPO	002011	G	1975#						
L\$DESC	011536	G	2030	3004#					
L\$DESP	002076	G	2029#						
L\$DEVP	002060	G	2015#						
L\$DISP	002124	G	2000	2059#					
L\$DLY	002116	G	2045#						
L\$DTP	002040	G	1999#						
L\$DTYP	002034	G	1995#						
L\$DU	026324	G	2026	4705#					
L\$DUT	002072	G	2025#						
L\$DVTY	011526	G	2016	2994#					
L\$EF	002052	G	2010#						
L\$ENVI	002044	G	2003#						
L\$ETP	002102	G	2033#						
L\$EXP1	002046	G	2005#						
L\$EXP4	002064	G	2019#						
L\$EXP5	002066	G	2021#						
L\$HARD	046250	G	1982	7908	7909#				
L\$HIME	002120	G	2047#						
L\$HPCP	002016	G	1981#						
L\$HPTP	002022	G	1985#						
L\$HW	002150	G	1986	2072	2073#				
L\$ICP	002104	G	2035#						
L\$INIT	025350	G	2036	4471#					



M 14  
N 14  
O 15  
P 15  
Q 15  
R 15  
S 15  
T 15  
U 15  
V 15  
W 15  
X 15  
Y 15  
Z 15  
A 16  
B 16  
C 16  
D 16  
E 16  
F 16  
G 16  
H 16  
I 16  
J 16  
K 16  
L 16

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CROSS REFERENCE TABLE -- USER SYMBOLS

LSLADP	002026	G	1989#																	
LSLAST	046636	G	1990	7991#																
LSLOAD	002100	G	2031#																	
LSLUN	002074	G	2027#																	
LSMREV	002050	G	2007#																	
LSNAME	002000	G	1964#																	
LSPRIO	002042	G	2001#																	
LSPROT	025342	G	2042	4455#																
LSPRT	002112	G	2041#																	
LSREPP	002062	G	2017#																	
LSREV	002010	G	1973#																	
LSRPT	025334	G	2018	4435#																
LSSPC	002056	G	2013#																	
LSSPCP	002020	G	1983#																	
LSSPTP	002024	G	1987#																	
LSSTA	002030	G	1991#																	
LSTEST	002114	G	2043#																	
LSIML	002014	G	1979#																	
LSUNIT	002012	G	1977#	4569																
L10000	002150		2072	2100#																
L10001	017522		3034#																	
L10002	017550		3047#																	
L10003	017600		3061#																	
L10004	017632		3075#																	
L10005	017664		3095#																	
L10006	017722		3115#	3120																
L10007	020074		3228#																	
L10010	025340		4445#																	
L10012	026232		4637	4643#																
L10013	026234		4659#																	
L10014	026322		4689	4695#																
L10015	026330		4710	4716#																
L10016	026336		4732	4738#																
L10017	046244		4838	4898	7889#															
L10020	036252		6439#																	
L10021	036442		6508#																	
L10022	045346		7723#																	
L10023	046330		7908	7954#																
L5060	014063		3018#	4543																
MAINT =	000144		6785#																	
MCREP	033454		5764	5770#																
MES	037252		3554*	3568	3582	3611	6861#													
MESDAT	037254		3555*	3567	3579	3581	3593	3596	3599	3610	6862#									
MESLON-	000020		6770#	7532	7693															
MGLCNT	011520		2973#	3067	5376*	5763	5776*	6360*	7621*											
MHRCNT	011522		2974#	3068	5377*	5765	5777*	6357*	7618*											
MLTYP	006570		2639#	3294	4806*	4825	4839*	5150	5259*	5278*	5324*	5326*	5328*	5330*	5332*					
			5337*	5349	6024	6029	6588													
MOBITE	007574		2700#	3823																
MOBITS	007556		2693#	3811																
MOCHK =	000010		2223#	4153	5309	6342	7106	7601												
MODE	006602		2656#	5395																
MODES	003102		2545#	4114																
MODLOC	000003		2208#																	
MODREM=	000004		2209#																	
MODS	007554		2687#	3330	6151*	6152*	6155*	6156*	6354	6363*	6608	7615	7624*							



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CROSS REFERENCE TABLE -- USER SYMBOLS

NOD107	010712	2865#
NOD11	010002	2786#
NOD110	010716	2867#
NOD111	010732	2868#
NOD112	010736	2870#
NOD113	010752	2871#
NOD114	010756	2874#
NOD115	010762	2877#
NOD116	010776	2878#
NOD117	011002	2879#
NOD12	010014	2787#
NOD120	011020	2880#
NOD121	011024	2881#
NOD122	011040	2882#
NOD123	011044	2883#
NOD124	011060	2884#
NOD125	011064	2885#
NOD126	011100	2886#
NOD127	011104	2887#
NOD13	010020	2788#
NOD130	011120	2888#
NOD131	011124	2889#
NOD132	011140	2890#
NOD133	011144	2891#
NOD134	011164	2892#
NOD135	011170	2894#
NOD136	011174	2895#
NOD137	011200	2896#
NOD14	010034	2789#
NOD140	011204	2897#
NOD141	011210	2898#
NOD142	011214	2899#
NOD143	011220	2900#
NOD144	011222	2903#
NOD145	011226	2904#
NOD146	011232	2905#
NOD147	011246	2906#
NOD15	010040	2790#
NOD150	011252	2907#
NOD151	011266	2908#
NOD152	011272	2911#
NOD153	011276	2912#
NOD154	011302	2913#
NOD155	011306	2916#
NOD156	011312	2919#
NOD157	011334	2920#
NOD16	010054	2791#
NOD160	011340	2921#
NOD161	011354	2922#
NOD162	011360	2923#
NOD163	011402	2924#
NOD164	011406	2925#
NOD165	011430	2926#
NOD166	011434	2929#
NOD167	011440	2930#
NOD17	010060	2792#

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CROSS REFERENCE TABLE -- USER SYMBOLS

NOD170	011444	2931#
NOD171	011450	2936#
NOD172	021030	3444#
NOD173	021034	3445#
NOD174	021040	3446#
NOD175	021042	3447#
NOD176	021056	3448#
NOD177	021060	3449#
NOD2	007726	2779#
NOD20	010064	2793#
NOD200	021074	3450#
NOD201	021076	3451#
NOD202	021110	3452#
NOD203	021112	3453#
NOD204	021132	3454#
NOD205	021136	3455#
NOD206	021142	3456#
NOD207	021156	3457#
NOD21	010076	2794#
NOD210	021160	3458#
NOD211	021174	3459#
NOD212	021176	3460#
NOD213	021214	3461#
NOD214	021220	3462#
NOD215	021224	3463#
NOD216	021226	3464#
NOD217	021230	3465#
NOD22	010102	2795#
NOD23	010114	2796#
NOD24	010120	2797#
NOD25	010122	2801#
NOD26	010126	2802#
NOD27	010142	2803#
NOD3	007730	2780#
NOD30	010146	2804#
NOD31	010164	2805#
NOD32	010170	2806#
NOD33	010206	2807#
NOD34	010212	2808#
NOD35	010230	2809#
NOD36	010234	2810#
NOD37	010252	2811#
NOD4	007744	2781#
NOD40	010256	2812#
NOD41	010302	2813#
NOD42	010306	2814#
NOD43	010312	2815#
NOD44	010330	2816#
NOD45	010334	2817#
NOD46	010346	2818#
NOD47	010352	2822#
NOD5	007746	2782#
NOD50	010356	2823#
NOD51	010400	2824#
NOD52	010402	2825#
NOD53	010426	2826#



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CROSS REFERENCE TABLE -- USER SYMBOLS

N20\$	010060	2790	2791#											
N25\$	010102	2793	2794#											
N30\$	010120	2792	2795	2796#	2801	2802	2803	2814	2817	2822	2825	2831	2834	2840
		2842	2844	2864	2870	2874	2894	2907	2911	2912	2916	2925	2929	2930
N40\$	010040	2788	2789#											
N42\$	007730	2778	2779#											
N43\$	007746	2780	2781#											
N44\$	007764	2782	2783#											
N45\$	010002	2784	2785#											
N46\$	010020	2786	2787#											
N50\$	010502	2789	2837#											
N51\$	010506	2838#												
N52\$	010512	2839#												
N60\$	010762	2876#												
N61\$	011002	2877	2878#											
N62\$	011024	2879	2880#											
N63\$	011044	2881	2882#											
N64\$	011064	2883	2884#											
N65\$	011104	2885	2886#											
N66\$	011124	2887	2888#											
N67\$	011144	2889	2890#											
N68\$	011170	2891	2893#											
N70\$	011174	2894#	2899											
N71\$	011204	2895	2896#											
N72\$	011210	2897#												
N73\$	011220	2898	2899#											
N80\$	010122	2787	2800#											
N81\$	010126	2801#												
N82\$	010170	2804	2805#											
N83\$	010212	2806	2807#											
N84\$	010234	2808	2809#											
N85\$	010256	2810	2811#											
N86\$	010306	2812	2813#											
N87\$	010334	2815	2816#											
OFSET	006532	2518#	3027	5705*	5722*									
OPBFPT	002514	2471#	5948											
OPBUF	002520	2413	2472#	5209	5852	5859	5867	5873	5874	5892	5894	5926	5927	5953
		5955												
OPCNT	002166	2400#	5207*	5871*	5875	5876								
OPEND	002642	2473#	5854											
OPRMM	014056	3018#	5861											
OPRMSG=	000015	2299#	2894											
OPVAR	006502	2502#	4630	5373*	5798	6122*	7456*							
OTINT =	000002	2252#												
OUTMAS	037071	6711#	7501*	7510*										
OUTVEC	011466	2951#	4597*	4598*	4627									
OSAPTS=	000000	1945#	1991											
OSAU =	000001	1945#	1958#	2023										
OSBGNR=	000001	1945#	1958#	2017										
OSBGNS=	000000	1945#	1983											
OSDU =	000001	1945#	1958#	2025										
OSERRT=	000000	1945#	2033											
OSGNSW=	000000	1945#	1987											
OSPOIN=	000001	1945#	1958#	2049										
OSSETU=	000000	1945#	1977	7989										
PAD =	001000	2265#	6086	6239	6485	6504	6550	7770						











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CROSS REFERENCE TABLE -- USER SYMBOLS

	1995	1997	1999	2001	2003	2005	2007	2010	2013	2015	2017	2019	2021
	2023	2025	2027	2029	2031	2033	2035	2037	2039	2041	2043	2045	2047
	2059	2073	2074	2994	3004	3021	3038	3051	3065	3085	3104	3203	4455
	4455	4471	4655	4669	4705	4727	6339	6477	7598	7909	7991#	7992	
SVCINS= 000001	1945#	1965	1966	1967	1968	1969	1970	1971	1972	1974	1976	1978	1980
	1982	1984	1986	1988	1990	1992	1994	1996	1998	2000	2002	2004	2006
	2008	2009	2011	2012	2014	2016	2018	2020	2022	2024	2026	2028	2030
	2032	2034	2036	2038	2040	2042	2044	2046	2048	2058	2060	2072	2995
	2997	3005	3010	3023	3024	3025	3026	3027	3028	3029	3050	3051	3052
	3035	3040	3041	3042	3043	3044	3045	3048	3053	3054	3055	3076	3057
	3058	3059	3062	3067	3068	3069	3070	3071	3072	3073	3076	3087	3088
	3089	3090	3091	3092	3093	3096	3106	3107	3108	3109	3110	3111	3112
	3113	3116	3119	3120	3229	3344	3345	3346	3347	3348	3352	3353	3354
	3355	3356	3390	3391	3392	3393	3394	3401	3402	3403	3404	3405	3406
	3407	3408	3418	3419	3420	3421	3422	3428	3429	3430	3431	3432	3487
	3488	3489	3490	3491	3492	3533	3534	3535	3536	3537	3547	3548	3549
	3550	3551	3567	3568	3569	3570	3571	3572	3578	3579	3580	3581	3582
	3583	3584	3585	3586	3603	3604	3605	3606	3607	3608	3609	3610	3611
	3612	3613	3614	3615	3634	3635	3636	3637	3638	3657	3658	3659	3660
	3661	3667	3668	3669	3670	3671	3672	3673	3674	3675	3682	3683	3684
	3685	3686	3687	3688	3696	3697	3698	3699	3700	3701	3703	3704	3705
	3706	3707	3708	3709	3729	3730	3731	3732	3733	3734	3735	3736	3745
	3746	3747	3748	3749	3750	3751	3752	3760	3761	3762	3763	3764	3765
	3766	3767	3777	3778	3779	3780	3781	3782	3786	3787	3788	3789	3790
	3806	3807	3808	3809	3810	3826	3827	3828	3829	3830	3864	3865	3866
	3867	3868	3869	3874	3875	3876	3877	3878	3879	3880	3883	3884	3885
	3886	3887	3888	3928	3929	3930	3931	3932	4124	4125	4126	4127	4128
	4129	4130	4131	4132	4159	4160	4161	4162	4163	4164	4165	4166	4167
	4168	4310	4311	4312	4313	4314	4353	4354	4355	4356	4357	4446	4478
	4482	4483	4485	4487	4488	4490	4492	4493	4497	4498	4499	4501	4509
	4510	4511	4513	4519	4520	4521	4523	4532	4534	4539	4540	4541	4542
	4543	4544	4545	4546	4551	4552	4553	4554	4555	4573	4574	4575	4577
	4608	4609	4610	4611	4612	4613	4618	4619	4620	4621	4622	4623	4625
	4626	4627	4628	4629	4630	4633	4634	4636	4637	4644	4660	4673	4674
	4686	4688	4689	4696	4709	4710	4717	4731	4732	4739	4769	4770	4771
	4772	4773	4811	4812	4813	4814	4815	4817	4818	4819	4820	4821	4822
	4831	4833	4834	4838	4847	4848	4849	4850	4851	4852	4853	4854	4864
	4865	4866	4867	4868	4873	4874	4875	4876	4877	4897	4898	4910	4911
	4912	4913	4914	4915	4923	4926	4927	4928	4929	4930	4951	4952	4953
	4954	4955	4956	4967	4968	4969	4970	4971	4972	5067	5068	5069	5070
	5071	5072	5139	5140	5141	5142	5143	5144	5145	5186	5187	5188	5189
	5190	5216	5217	5218	5219	5220	5290	5291	5292	5293	5294	5339	5340
	5341	5342	5343	5356	5357	5358	5359	5360	5698	5699	5700	5701	5716
	5717	5718	5719	5729	5730	5731	5732	5772	5773	5774	5775	5824	5825
	5826	5827	5828	5857	5858	5859	5860	5861	5862	5863	5864	5921	5922
	5923	5924	5925	5948	5949	5950	5951	5952	6003	6014	6015	6016	6017
	6051	6052	6053	6054	6057	6095	6118	6119	6120	6121	6259	6271	6272
	6273	6274	6393	6394	6395	6396	6418	6419	6420	6421	6440	6509	6559
	6599	6617	6631	6632	6633	6634	6903	6904	6905	6906	6907	6908	7137
	7286	7287	7288	7289	7290	7452	7453	7454	7455	7470	7471	7472	7473
	7524	7872	7890	7908	7915	7916	7917	7925	7926	7927	7928	7930	7931
	7932	7933	7935	7936	7937	7939	7941	7942	7943	7945	7947	7948	7949
	7950	7951	7953	7988	7989	7990							
SVC SUB= 000001	19 5#												
SVC TAG= 000001	1945#	2100	3034	3047	3061	3075	3095	3115	3228	3409	4445	4547	4643
	4659	4695	4716	4738	4855	5865	6439	6508	7723	7889	7954		



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CROSS REFERENCE TABLE -- USER SYMBOLS

TRIBN	037061	4603*	4605*	6698#	7080	7085*	7181	7668	7769											
TRIBNQ	046524	7948	7956#																	
TRVACT	024364	4223	4234#	4250	4255	4260	4263	4283	4349	4372	4393	4417								
TRVALN	025156	4212	4376#																	
TRVALP	025112	4211	4362#																	
TRVBIF	024470	4208	4263#																	
TRVBR	024460	4207	4260#																	
TRVBRC	024404	4221	4241#	4261	4266	4285	4359	4374	4395	4421										
TRVDEC	024564	4214	4288#																	
TRVERR	024422	4205	4250#																	
TRVEXI	024442	4206	4255#																	
TRVNMA	024604	4289	4292#																	
TRVNOR	024414	4246#	4267	4284	4350	4373	4394													
TRVNUM	024576	4210	4291#																	
TRVOCT	024576	4213	4290#																	
TRVSPA	024512	4209	4269#																	
TRVSTR	025244	4215	4399#																	
TSOM =	000400	2374#	6484																	
TTL =	000001	2206#	4839	6024																
TTLL =	000010	2371#	6023	6026																
TTLLOP =	000044	2322#	2919																	
TTOTCC	006464	2593#	4084	4781*	4906	4917	4940*	5112*												
TURNON	037142	6758#	6918*	7098	7111*	7718*	7767*													
TXACT =	000002	2369#																		
TXBUF	003150	2572#	4052	4791	5115															
TXC =	000002	2237#	3274																	
TXCSR	011160	2946#	4591*	4592*	5998*	6010	6023*	6026*	6047	6091*	6153	6254*	6267	6350						
		6488*	6554*	6627	7466	7611	7859*													
TXENA =	000020	2372#	6091	6254	6554	7859														
TXINEX	036440	6483	6491	6496	6503	6506#														
TXIN1	036300	6480	6484#																	
TXIN2	036346	6486	6492#																	
TXIN3	036432	6499	6504#																	
TXM =	000020	2259#	6072	6239	6243	6498	6500	7788	7807	7819	7829	7841								
TXMTOT	006462	2592#	4072	4797*	4919*	4921	4942*	5107	5111*	5353	5438	5461	5486							
TXONLY	032240	2657	5436#																	
TXON2	032246	5437#																		
TXPRC	037116	6748#	6896*	6948	6971	7000	7003*	7027*	7040	7051	7233*	7284*	7322	7331*						
		7400*	7410	7794																
TXPREX	046236	7869	7879#																	
TXPROT	045350	6926	6946#	6969*	6998*	7016*	7049*	7163	7177	7213	7258	7269	7278	7300						
		7310	7346*	7365	7379	7402	7745#													
TXPTR	006442	2583#	4065*	4067*	4068	4077*	4079	4784*	4795	4920*	4934*	4935	4939*	5113*						
		5114	5365*	5437	5462	5487														
TXQ =	000000	2236#	3269																	
TXREAD	037122	6490*	6750#	6894*	6979	7750	7771*	7873												
TXTHER	037067	6708#	7228*	7485	7487*	7490*														
TSARGC =	000001	1965#	1966#	1967#	1968#	1969#	1970#	3023#	3032	3040#	3045	3053#	3059	3067#						
		3073	3087#	3093	3106#	3113	3344#	3348	3352#	3356	3390#	3394	3418#	3422						
		3428#	3432	3487#	3492	3533#	3537	3547#	3551	3567#	3572	3578#	3586	3603#						
		3615	3634#	3638	3657#	3661	3667#	3675	3682#	3688	3696#	3701	3703#	3709						
		3729#	3736	3745#	3752	3760#	3767	3777#	3782	3786#	3790	3806#	3810	3826#						
		3830	3864#	3869	3874#	3880	3883#	3888	3928#	3932	4124#	4132	4159#	4168						
		4310#	4314	4353#	4357	4551#	4555	4769#	4773	4811#	4815	4864#	4868	4873#						
		4877	4910#	4915	4925#	4930	4951#	4956	4967#	4972	5067#	5072	5139#	5145						
		5186#	5190	5216#	5220	5290#	5294	5339#	5343	5356#	5360	5824#	5828	5921#						







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CROSS REFERENCE TABLE -- MACRO NAMES

ENDMOD	1#	1945#	7992														
ENDMSG	1#	1945#	5033	3046	3060	3074	3094	3114									
ENDPRO	1#	1945#	4461														
ENDPTA	1#	1945#															
ENDRPT	1#	1945#	4444														
ENDSEG	1#	1945#															
ENDSET	1#	1945#															
ENDSFT	1#	1945#															
ENDSRV	1#	1945#	3227	6438	6507	7722											
ENDSUB	1#	1945#															
ENDSW	1#	1945#															
ENDTST	1#	1945#	7888														
EQUALS	1#	1945#	2115														
ERRDF	1#	1945#															
ERRHRD	1#	1945#															
ERROR	1#	1945#															
ERRSF	1#	1945#															
ERRSOF	1#	1945#	5697	5715	5728	5771	6013	6050	6117	6270	6392	6417	6630	7451	7469		
ERRTBL	1#	1945#															
ESCAPE	1#	1945#															
EXIT	1#	1945#	3118	4635	4687	4708	4730	4836	4896								
FEQUAL	1#	1945#															
GFTBYT	1#	1945#															
GETPRI	1#	1945#															
GETWOR	1#	1945#															
GMANIA	1#	1945#															
GMANID	1#	1945#	3400	4538	4846	5856											
GMANIL	1#	1945#															
GPHARD	1#	1945#	4572														
GPRMA	1#	1945#	7924	7929													
GPRMD	1#	1945#	3401#	3404	4539#	4542	4847#	4850	5857#	5860	7946						
GPRML	1#	1945#	7914	7934	7940												
HEADER	1#	1945#	1963														
INLOOP	1#	1945#															
IOSETU	1#	1945#															
IOSTAR	1#	1945#															
KT11	1#	1945#															
LASTAD	1#	1945#	7987														
MANUAL	1#	1945#	4830														
MEMORY	1#	1945#															
MSBYTE	1#	1945#	1964#	1970	1971	1972											
MSCHEC	1#	1945#	3119#	4636#	4688#	4709#	4731#	4837#	4897#								
MSCNTO	1#	1945#	3404#	4542#	4850#	5860#	7915#	7925#	7930#	7935#	7941#	7947#					
MSCOUN	1#	1945#	3023#	3040#	3053#	3067#	3087#	3106#	3344#	3352#	3390#	3418#	3428#	3487#	3533#		
	3547#	3567#	3578#	3603#	3634#	3657#	3667#	3682#	3696#	3703#	3729#	3745#	3760#	3777#	3786#		
	3806#	3826#	3864#	3874#	3883#	3928#	4124#	4159#	4310#	4353#	4551#	4769#	4811#	4864#	4873#		
	4910#	4925#	4951#	4967#	5067#	5139#	5186#	5216#	5290#	5339#	5356#	5824#	5921#	5948#	7286#		
MSDATA	1#	1945#	1964#	1973	1975	1977	1979	1981	1983	1985	1987	1989	1991	1993	1995		
	1997	1999	2001	2003#	2005	2007	2010	2013	2015	2017	2019	2021	2023	2025	2027		
	2029	2031	2033	2035	2037	2039	2041	2043	2045	2047	2994#	3004#					
MSDECR	1#	1945#	2100#	3034#	3047#	3061#	3075#	3095#	3115#	3228#	4445#	4462#	4643#	4659#	4695#		
	4716#	4738#	6439#	6508#	7723#	7889#	7953#	7993#									
MSDEFA	1#	1945#	3404#	4542#	4850#	5860#	7915#	7925#	7930#	7935#	7941#	7947#					
MSENDE	1#	1945#	2100#	3034#	3047#	3061#	3075#	3095#	3115#	3228#	4445#	4643#	4659#	4695#	4716#		
	4738#	6439#	6508#	7723#	7889#	7953#	7993#										
MSERRI	1#	1945#	5698#	5716#	5729#	5772#	6014#	6051#	6118#	6271#	6393#	6418#	6631#	7452#	7470#		



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CROSS REFERENCE TABLE -- MACRO NAMES

	5217#	5218	5219#	5220	5290#	5291#	5292	5293#	5294	5339#	5340#	5341	5342#	5343	5356#
	5357#	5358	5359#	5360	5698#	5699#	5700#	5701#	5716#	5717#	5718#	5719#	5729#	5730#	5731#
	5732#	5772#	5773#	5774#	5775#	5824#	5825#	5826	5827#	5828	5857#	5858#	5859#	5860#	5861
	5862	5863	5864	5921#	5922#	5923	5924#	5925	5948#	5949#	5950	5951#	5952	6003#	6014#
	6015#	6016#	6017#	6051#	6052#	6053#	6054#	6057#	6095#	6118#	6119#	6120#	6121#	6259#	6271#
	6272#	6273#	6274#	6393#	6394#	6395#	6396#	6418#	6419#	6420#	6421#	6439#	6440	6508#	6509
	6559#	6599#	6617#	6631#	6632#	6633#	6634#	6903#	6904#	6905#	6906#	6907#	6908	7137#	7286#
	7287#	7288	7289#	7290	7452#	7453#	7454#	7455#	7470#	7471#	7472#	7473#	7723#	7724	7872#
	7890#	7908#	7915#	7916	7917	7925#	7926	7927	7928	7930#	7931	7932	7933	7935#	7936
	7937	7939#	7941#	7942	7943	7945#	7947#	7948	7949	7950	7951	7953#	7988#	7989#	7990#
MSGNLS	1#	1945#	3401#	3409	4539#	4547	4847#	4855	5857#	5865					
MSGNSU	1#	1945#													
MSGNTA	1#	1945#	2100#	3034#	3047#	3061#	3075#	3095#	3115#	3228#	4445#	4643#	4659#	4695#	4716#
	4738#	6439#	6508#	7723#	7889#	7953#	7954								
MSGNTE	1#	1945#	4754#												
MSHAPT	1#	1945#	1964#												
MSHNAP	1#	1945#	1964#	2003											
MSINCR	1#	1945#	1947#	2072#	3021#	3031#	3035#	3038#	3044#	3048#	3051#	3058#	3062#	3065#	3072#
	3076#	3085#	3092#	3096#	3104#	3112#	3116#	3203#	3347#	3355#	3393#	3401#	3410	3421#	3431#
	3491#	3536#	3550#	3571#	3585#	3614#	3637#	3660#	3674#	3687#	3700#	3708#	3735#	3751#	3766#
	3781#	3789#	3809#	3829#	3868#	3879#	3887#	3931#	4131#	4167#	4313#	4356#	4435#	4446#	4455#
	4471#	4478#	4483#	4488#	4493#	4499#	4510#	4520#	4532#	4539#	4548	4554#	4574#	4612#	4622#
	4629#	4634#	4636#	4644#	4655#	4660#	4669#	4674#	4686#	4688#	4696#	4705#	4717#	4727#	4739#
	4754#	4755#	4772#	4814#	4821#	4831#	4837#	4847#	4856	4867#	4876#	4897#	4914#	4929#	4955#
	4971#	5071#	5144#	5189#	5219#	5293#	5342#	5359#	5698#	5716#	5729#	5772#	5827#	5857#	5866
	5924#	5951#	6003#	6014#	6051#	6057#	6095#	6118#	6259#	6271#	6339#	6393#	6418#	6477#	6559#
	6599#	6617#	6631#	6907#	7137#	7289#	7452#	7470#	7598#	7872#	7890#	7908#			
MSIOSE	1#	1945#													
MSLDRO	1#	1945#	4482#	4487#	4492#	4498#	4509#	4519#	4573#	4633#	4673#				
MSMASK	1#	1945#													
MSMCHI	1#	1945#													
MSMCLO	1#	1945#													
MSMSK1	1#	1945#													
MSPOP	1#	1945#	2100#	3034#	3047#	3061#	3075#	3095#	3115#	3228#	4445#	4462#	4643#	4659#	4695#
	4716#	4738#	6439#	6508#	7723#	7889#	7953#	7993#							
MSPRIN	1#	1945#	3023#	3040#	3053#	3067#	3081#	3106#	3344#	3352#	3390#	3418#	3428#	3487#	3533#
	3547#	3567#	3578#	3603#	3634#	3657#	3667#	3682#	3696#	3703#	3729#	3745#	3760#	3777#	3786#
	3806#	3826#	3864#	3874#	3883#	3928#	4124#	4159#	4310#	4353#	4551#	4769#	4811#	4864#	4873#
	4910#	4925#	4951#	4967#	5067#	5139#	5186#	5216#	5290#	5339#	5356#	5824#	5921#	5948#	7286#
MSPUSH	1#	1945#	1947#	2072#	3021#	3038#	3051#	3065#	3085#	3104#	3203#	4435#	4455#	4471#	4655#
	4669#	4705#	4727#	4754#	4755	6339#	6477#	7598#	7908#						
MSPUT	1#	1945#	3023#	3040#	3053#	3067#	3087#	3106#	3344#	3352#	3390#	3418#	3428#	3487#	3533#
	3547#	3567#	3578#	3603#	3634#	3657#	3667#	3682#	3696#	3703#	3729#	3745#	3760#	3777#	3786#
	3806#	3826#	3864#	3874#	3883#	3928#	4124#	4159#	4310#	4353#	4551#	4608#	4618#	4625#	4769#
	4811#	4817#	4864#	4873#	4910#	4925#	4951#	4967#	5067#	5139#	5186#	5216#	5290#	5339#	5356#
	5824#	5921#	5948#	6903#	7286#										
MSPUT1	1#	1945#	3023#	3025	3027	3028	3029	3040#	3041	3042	3053#	3054	3055	3056	3067#
	3068	3069	3070	3087#	3088	3089	3090	3106#	3107	3108	3109	3110	3344#	3345	3352#
	3353	3390#	3391	3418#	3419	3428#	3429	3487#	3488	3489	3533#	3534	3547#	3548	3567#
	3568	3569	3578#	3580	3582	3583	3603#	3605	3607	3609	3611	3612	3634#	3635	3657#
	3658	3667#	3668	3669	3670	3671	3672	3682#	3683	3684	3685	3696#	3697	3698	3703#
	3704	3705	3706	3729#	3730	3731	3732	3733	3745#	3746	3747	3748	3749	3760#	3761
	3762	3763	3764	3777#	3778	3779	3786#	3787	3806#	3807	3826#	3827	3864#	3865	3866
	3874#	3876	3877	3883#	3884	3885	3928#	3929	4124#	4125	4126	4127	4128	4129	4159#
	4160	4161	4162	4163	4164	4165	4310#	4311	4353#	4354	4551#	4552	4608#	4609	4610
	4611	4618#	4619	4620	4621	4625#	4626	4627	4628	4769#	4770	4811#	4812	4817#	4818

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CROSS REFERENCE TABLE -- MACRO NAMES

	4819	4820	4864#	4865	4873#	4874	4910#	4911	4912	4925#	4926	4927	4951#	4952	4953
	4967#	4968	4969	5067#	5068	5069	5139#	5140	5141	5142	5186#	5187	5216#	5217	5290#
	5291	5339#	5340	5356#	5357	5824#	5825	5921#	5922	5948#	5949	6903#	6904	6905	6906
	7286#	7287													
MSRADI	1#	1945#	3404#	4542#	4850#	5860#	7915#	7925#	7930#	7935#	7941#	7947#			
MSRBRO	1#	1945#													
MSRNHO	1#	1945#	4509#	4511	4519#	4521	4573#	4575							
MSSETS	1#	1945#	1947#	2072#	3021#	3038#	3051#	3065#	3085#	3104#	3203#	4435#	4455#	4471#	4655#
	4669#	4705#	4727#	4755#	6339#	6477#	7598#	7908#							
MSSTAR	1#	1945#													
MS SVC	1#	1945#	3023#	3031	3034#	3035	3040#	3044	3047#	3048	3053#	3058	3061#	3062	3067#
	3072	3075#	3076	3087#	3092	3095#	3096	3106#	3112	3115#	3116	3119#	3344#	3347	3352#
	3355	3390#	3393	3401#	3418#	3421	3428#	3431	3487#	3491	3533#	3536	3547#	3550	3567#
	3571	3578#	3585	3603#	3614	3634#	3637	3657#	3660	3667#	3674	3682#	3687	3696#	3700
	3703#	3708	3729#	3735	3745#	3751	3760#	3766	3777#	3781	3786#	3789	3806#	3809	3826#
	3829	3864#	3868	3874#	3879	3883#	3887	3928#	3931	4124#	4131	4159#	4167	4310#	4313
	4353#	4356	4445#	4446	4478#	4482#	4483	4487#	4488	4492#	4493	4498#	4499	4509#	4510
	4519#	4520	4532#	4539#	4551#	4554	4573#	4574	4608#	4612	4618#	4622	4625#	4629	4633#
	4634	4636#	4643#	4644	4659#	4660	4673#	4674	4686#	4688#	4695#	4696	4709#	4716#	4717
	4731#	4738#	4739	4769#	4772	4811	4814	4817#	4821	4831#	4837#	4847#	4864#	4867	4873#
	4876	4897#	4910#	4914	4925#	4929	4951#	4955	4967#	4971	5067#	5071	5139#	5144	5186#
	5189	5216#	5219	5290#	5293	5339#	5342	5356#	5359	5698	5716	5729	5772	5824#	5827
	5857#	5921#	5924	5948#	5951	6003#	6014	6051	6057#	6095#	6118	6259#	6271	6393	6418
	6559#	6599#	6617#	6631	6903#	6907	7137#	7286#	7289	7452	7470	7872#	7889#	7890	
MSLAB	1#	1945#	3031#	3035#	3044#	3048#	3058#	3062#	3072#	3076#	3092#	3096#	3112#	3116#	3347#
	3355#	3393#	3401#	3421#	3431#	3491#	3536#	3550#	3571#	3585#	3614#	3637#	3660#	3674#	3687#
	3700#	3708#	3735#	3751#	3766#	3781#	3789#	3809#	3829#	3868#	3879#	3887#	3931#	4131#	4167#
	4313#	4356#	4446#	4478#	4483#	4488#	4493#	4499#	4510#	4520#	4532#	4539#	4554#	4574#	4612#
	4622#	4629#	4634#	4636#	4644#	4660#	4674#	4686#	4688#	4696#	4717#	4739#	4772#	4814#	4821#
	4831#	4837#	4847#	4867#	4876#	4897#	4914#	4929#	4955#	4971#	5071#	5144#	5189#	5219#	5293#
	5342#	5359#	5698#	5716#	5729#	5772#	5827#	5857#	5924#	5951#	6003#	6014#	6051#	6057#	6095#
	6118#	6259#	6271#	6393#	6418#	6559#	6599#	6617#	6631#	6907#	7137#	7289#	7452#	7470#	7872#
	7890#														
MSSTL	1#	1945#	3031#	3035#	3044#	3048#	3058#	3062#	3072#	3076#	3092#	3096#	3112#	3116#	3347#
	3355#	3393#	3401#	3421#	3431#	3491#	3536#	3550#	3571#	3585#	3614#	3637#	3660#	3674#	3687#
	3700#	3708#	3735#	3751#	3766#	3781#	3789#	3809#	3829#	3868#	3879#	3887#	3931#	4131#	4167#
	4313#	4356#	4446#	4478#	4483#	4488#	4493#	4499#	4510#	4520#	4532#	4539#	4554#	4574#	4612#
	4622#	4629#	4634#	4636#	4644#	4660#	4674#	4686#	4688#	4696#	4717#	4739#	4772#	4814#	4821#
	4831#	4837#	4847#	4867#	4876#	4897#	4914#	4929#	4955#	4971#	5071#	5144#	5189#	5219#	5293#
	5342#	5359#	5698#	5716#	5729#	5772#	5827#	5857#	5924#	5951#	6003#	6014#	6051#	6057#	6095#
	6118#	6259#	6271#	6393#	6418#	6559#	6599#	6617#	6631#	6907#	7137#	7289#	7452#	7470#	7872#
	7890#														
MSWORD	1#	1945#	2003#	2012	2058#	2060	3119#	3401#	3403	3404#	4539#	4541	4542#	4636#	4688#
	4709#	4731#	4837#	4847#	4849	4850#	4897#	5698#	5699	5700	5701	5716#	5717	5718	5719
	5729#	5730	5731	5732	5772#	5773	5774	5775	5857#	5859	5860#	6014#	6015	6016	6017
	6051#	6052	6053	6054	6118#	6119	6120	6121	6271#	6272	6273	6274	6393#	6394	6395
	6396	6418#	6419	6420	6421	6631#	6632	6633	6634	7452#	7453	7454	7455	7470#	7471
	7472	7473	7915#	7925#	7930#	7935#	7939#	7941#	7945#	7947#	7989	7990			
MSXFER	1#	1945#	7939#	7945#											
NODCL	1951#	2777	2778	2779	2780	2781	2782	2783	2784	2785	2786	2787	2788	2789	2790
	2791	2792	2793	2794	2795	2796	2797	2801	2802	2803	2804	2805	2806	2807	2808
	2809	2810	2811	2812	2813	2814	2815	2816	2817	2818	2822	2823	2824	2825	2826
	2831	2832	2833	2834	2835	2838	2839	2840	2841	2842	2843	2844	2845	2848	2849
	2850	2851	2852	2853	2856	2857	2858	2859	2861	2862	2863	2864	2865	2867	2868
	2870	2871	2874	2877	2878	2879	2880	2881	2882	2883	2884	2885	2886	2887	2888
	2889	2890	2891	2892	2894	2895	2896	2897	2898	2899	2900	2903	2904	2905	2906

CVCLHC DPV-11 DATA COMM. LINK TEST  
CVCLHC.P11 22-MAR-82 11:09

MACY11 30A(1052) 23-MAR-82 16:43 PAGE 231  
CROSS REFERENCE TABLE -- MACRO NAMES

	2907	2908	2911	2912	2913	2916	2919	2920	2921	2922	2923	2924	2925	2926	2929
	2930	2931	2936	3444	3445	3446	3447	3448	3449	3450	3451	3452	3453	3454	3455
	3456	3457	3458	3459	3460	3461	3462	3463	3464	3465					
OPEN	1#	1945#													
POINTE	1#	1945#	1957												
PRINTB	1#	1945#	3022	3039	3052	3066	3086	3105							
PRINTF	1#	1945#	3343	3351	3389	3417	3427	3486	3546	3863	3873	3882	3927	4309	4352
	4550	4768	4810	4863	4872	4909	4924	4950	4966	5066	5138	5185	5215	5289	5338
	5355	5823	5920	5947	7285										
PRINTS	1#	1945#	3532	3566	3577	3602	3633	3656	3666	3681	3695	3702	3728	3744	3759
	3776	3785	3805	3825	4123	4158									
PRINTX	1#	1945#													
READBU	1#	1945#	4531												
READEF	1#	1945#	4481	4486	4491	4497									
RFLAGS	1#	1945#													
SETPRI	1#	1945#	4632	4672											
SETVEC	1#	1945#	4607	4617	4624	4816	6902								
SLASH	1#	1945#													
STARS	1#	1945#													
SVC	1#	1945#													
XFER	1#	1945#	3119#	4636#	4688#	4709#	4731#	4837#	4897#						
XFERF	1#	1945#	7944												
XFERT	1#	1945#	7938												

. ABS. 046636 000

ERRORS DETECTED: 0

CVCLHC, CVCLHC.LST/CRF/SOL=SVC34R.MLB, CVCLHC.P11  
RUN-TIME: 27 34 4 SECONDS  
RUN-TIME RATIO: 101/66=1.5  
CORE USED: 22K (43 PAGES)

